



1510 – B Third Street
Tillamook, Oregon 97141
www.tillamook.or.us
Building (503) 842-3407
Planning (503) 842-3408
Sanitation (503) 842-3409
FAX (503) 842-1819
Toll Free 1(800) 488-8280

Land of Cheese, Trees and Ocean Breeze

VARIANCE #851-23-000421-PLNG: Martin
*NOTICE TO MORTGAGEE, LIENHOLDER, VENDOR OR SELLER:
ORS 215 REQUIRES THAT IF YOU RECEIVE THIS NOTICE,
IT MUST BE PROMPTLY FORWARDED TO THE PURCHASER*

NOTICE OF ADMINISTRATIVE REVIEW
Date of Notice: November 17, 2023

Notice is hereby given that the Tillamook County Department of Community Development is considering the following:

851-23-000421-PLNG: A Variance request to reduce the required 20-foot front yard setback to 10-feet to allow for the placement of a single-family dwelling on the subject property. The subject property is accessed off Twana Trace Road, a private road, that abuts Sunset Drive, a County owned road, and is designated as Tax Lot 1708 of Section 20BB, Township 3 North, Range 10 West of the Willamette Meridian, Tillamook County, Oregon. The property is zoned Neahkahnie Urban Residential Zone (NK-15). The applicant and property owner are Claudia Martin.

Written comments received by the Department of Community Development prior to 4:00 p.m. on December 1, 2023, will be considered in rendering a decision. Comments should address the criteria upon which the Department must base its decision. Notice of the application, a map of the subject area, and the applicable criteria are being mailed to all property owners within 250-feet of the exterior boundaries of the subject parcel for which an application has been made and other appropriate agencies at least 14-days prior to this Department rendering a decision on the request. A decision will be rendered no sooner than December 4, 2023.

A copy of the application, along with a map of the request area and the applicable criteria for review are available for inspection at the Department of Community Development office located at 1510-B Third Street, Tillamook, Oregon 97141. They are also available on the Tillamook County Department of Community Development website: <https://www.co.tillamook.or.us/commdev/landuseapps>.

If you have any questions about this application, please contact the Department of Community Development at (503) 842-3408 ext. 3412 or by contacting Lynn Tone, DCD Office Specialist, at ltone@co.tillamook.or.us.

Sincerely,

Sheila Shoemaker

Sarah Absher, CFM, Interim Director

Enc. Maps and Applicable Ordinance criteria

REVIEW CRITERIA

ARTICLE VIII - VARIANCE PROCEDURES AND CRITERIA

SECTION 8.030: REVIEW CRITERIA: A VARIANCE shall be granted, according to the procedures set forth in Section

8.020, if the applicant adequately demonstrates that the proposed VARIANCE satisfies all of the following criteria:

- (1) Circumstances attributable either to the dimensional, topographic, or hazardous characteristics of a legally existing lot, or to the placement of structures thereupon, would effectively preclude the enjoyment of a substantial property right enjoyed by the majority of landowners in the vicinity, if all applicable standards were to be met. Such circumstances may not be self-created.
- (2) A VARIANCE is necessary to accommodate a use or accessory use on the parcel which can be reasonably expected to occur within the zone or vicinity.
- (3) The proposed VARIANCE will comply with the purposes of relevant development standards as enumerated in Section 4.005 and will preserve the right of adjoining property owners to use and enjoy their land for legal purposes.
- (4) There are no reasonable alternatives requiring either a lesser or no VARIANCE.

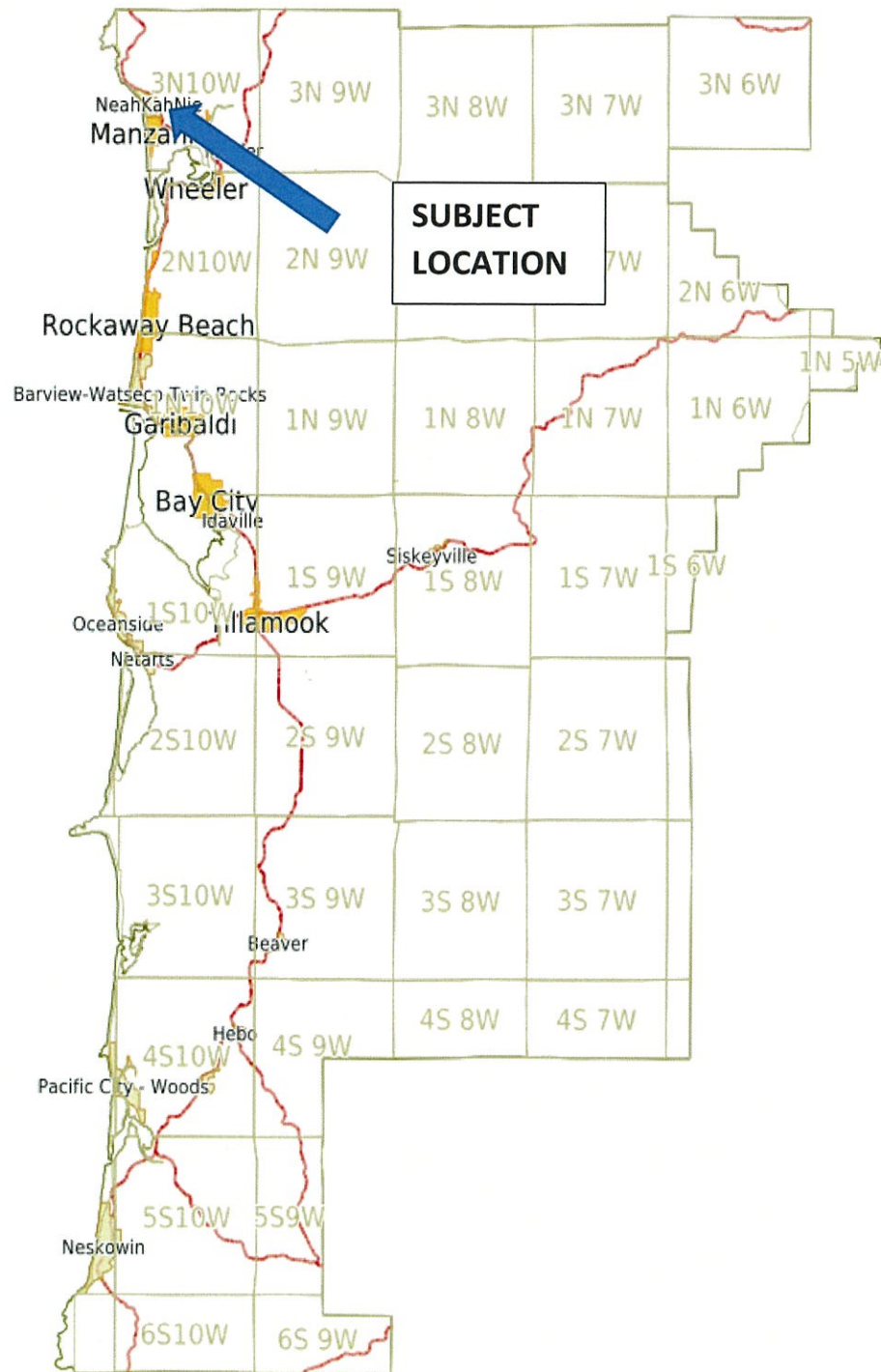
SECTION 4.005: RESIDENTIAL AND COMMERCIAL ZONE STANDARDS

PURPOSE: In all RESIDENTIAL AND COMMERCIAL ZONES, the purpose of land use standards are the following:

- (1) To ensure the availability of private open space;
- (2) To ensure that adequate light and air are available to residential and commercial structures;
- (3) To adequately separate structures for emergency access;
- (4) To enhance privacy for occupants of residences;
- (5) To ensure that all private land uses that can be reasonably expected to occur on private land can be entirely accommodated on private land, including but not limited to dwellings, shops, garages, driveways, parking, areas for maneuvering vehicles for safe access to common roads, alternative energy facilities, and private open spaces;
- (6) To ensure that driver visibility on adjacent roads will not be obstructed;
- (7) To ensure safe access to and from common roads;
- (8) To ensure that pleasing views are neither unreasonably obstructed nor obtained;
- (9) To separate potentially incompatible land uses;
- (10) To ensure access to solar radiation for the purpose of alternative energy production.

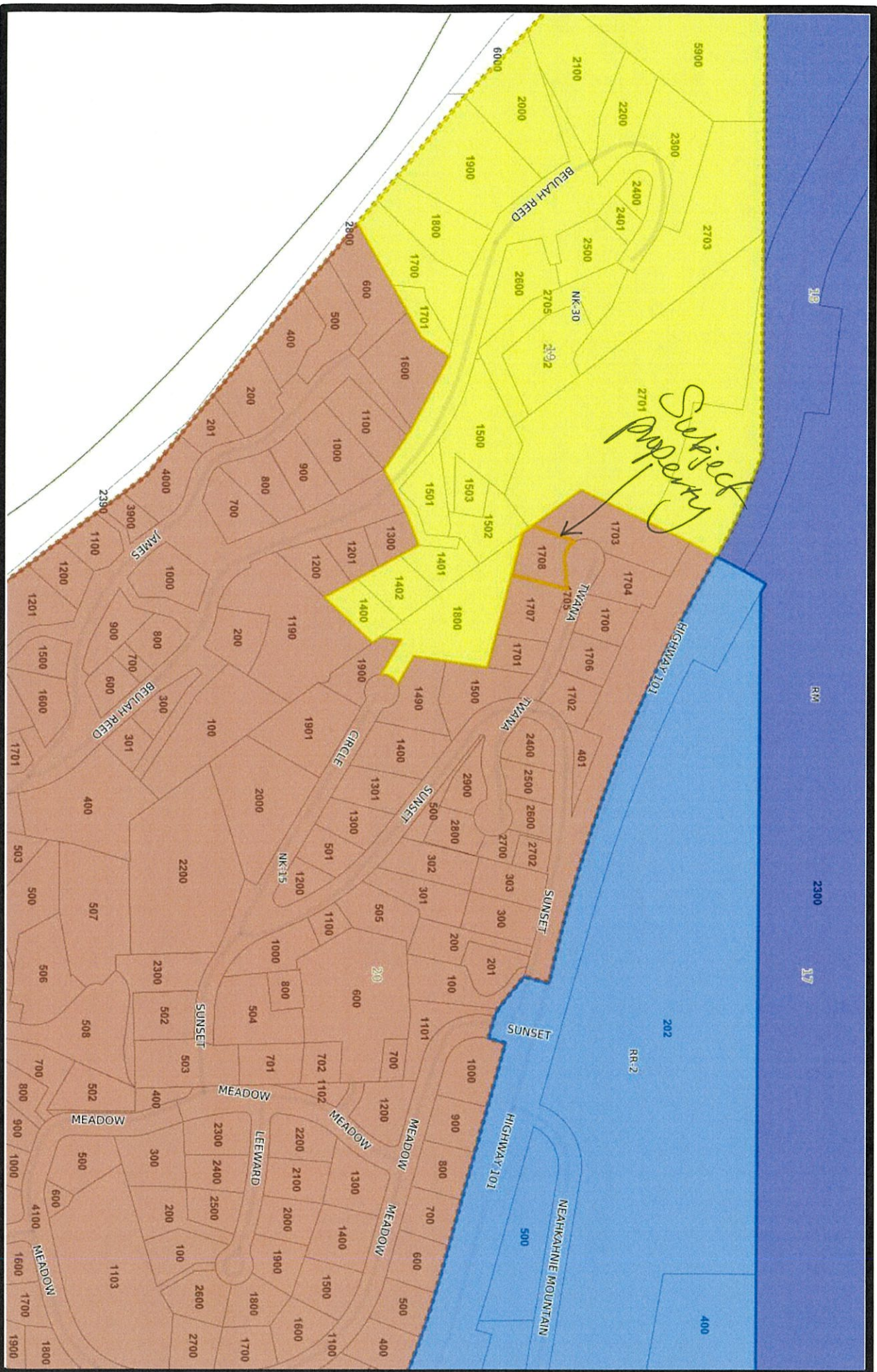
EXHIBIT A

VICINITY MAP

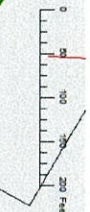


#851-23-000421-PLNG:
Martin

Map

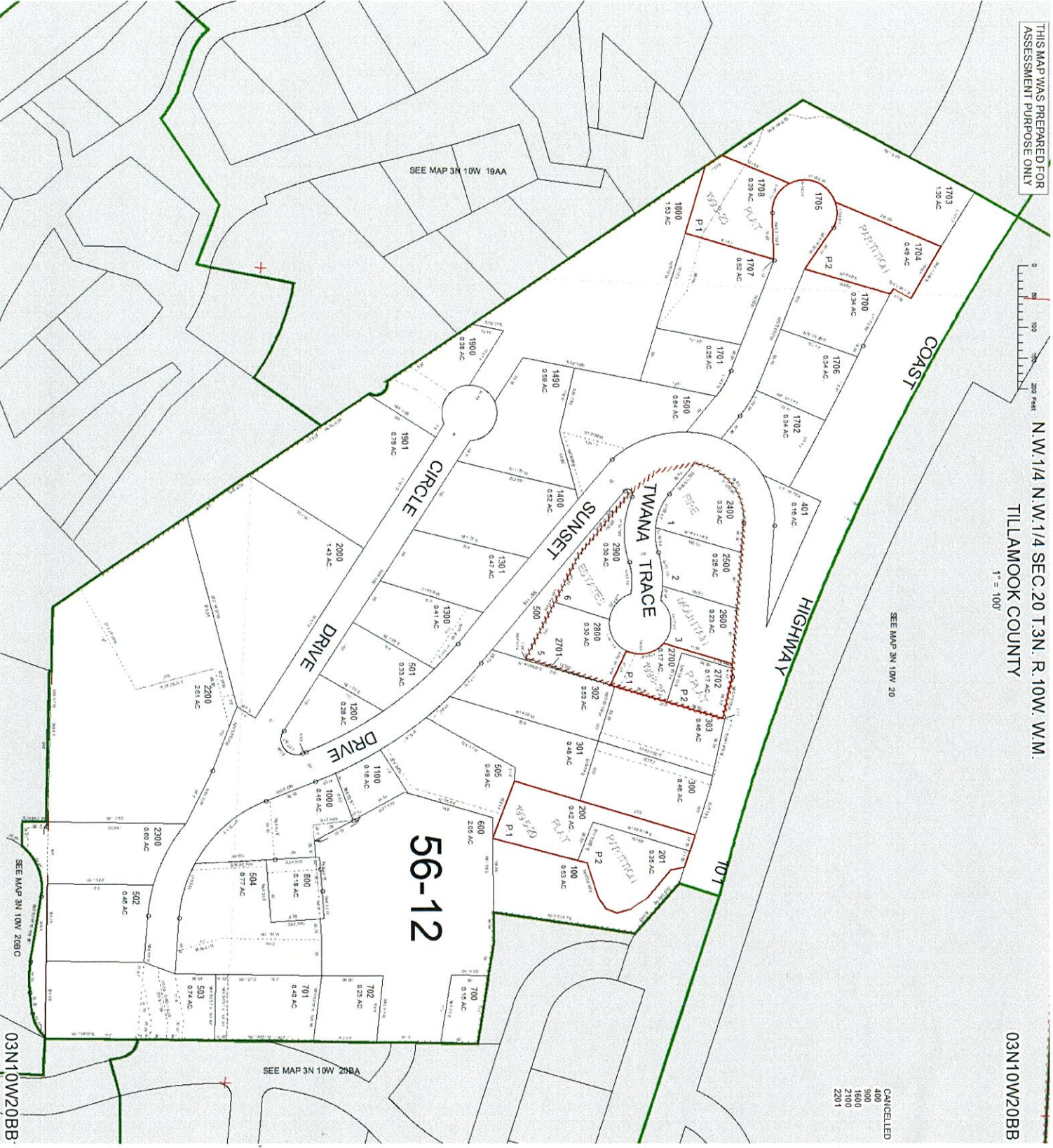


THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSE ONLY



N. W. 1/4 N. W. 1/4 SEC. 20 T. 3N. R. 10W. W.M.
TILLAMOOK COUNTY
1" = 100'

03N10W20BB



SEE MAP 3N 10W 20

SEE MAP 3N 10W 19AA

SEE MAP 3N 10W 20BA

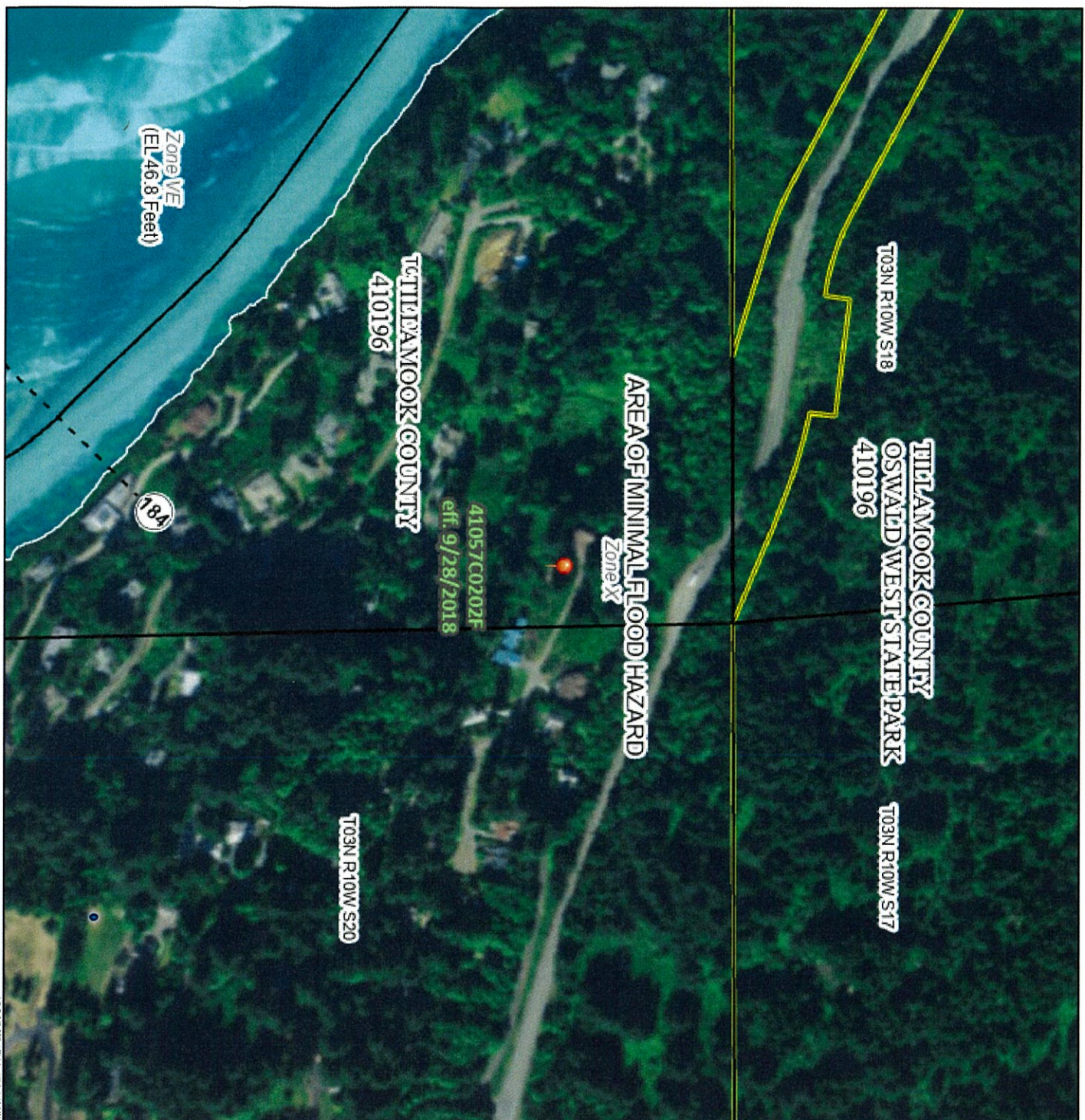
56-12

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03N10W20BB
Revised 8/1/22 W.S

National Flood Hazard Layer FIRMette

123°57'8"W 45°44'31"N



Legend

SEE THIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS

- Without Base Flood Elevation (BFE) Zone A, V, AE, AH, VE, AR
- With BFE or Depth Zone AE, AO, AH, VE, AR
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD

- 0.2% Annual Chance Flood Hazard, Area of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile (Zone X)
- Future Conditions 1% Annual Chance Flood Hazard (Zone X)
- Area with Reduced Flood Risk due to Levee. See Notes. (Zone X)
- Area with Flood Risk due to Levee (Zone D)

OTHER AREAS

- NO SCREEN Area of Minimal Flood Hazard Zone X
- Effective LOMRs
- Area of Undetermined Flood Hazard Zone

GENERAL STRUCTURES

- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES

- 20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
- 17.5 Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS

- Digital Data Available
- No Digital Data Available
- Unmapped

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property/location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards.

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **11/2/2023 at 7:19 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



U.S. Fish and Wildlife Service

National Wetlands Inventory

3N1020BB01708











U.S. Fish and Wildlife Service, National Standards and Support Team, wetlands, te

Neahkahnie Beach

November 2, 2023

Wetlands

-  Estuarine and Marine Deepwater
-  Estuarine and Marine Wetland
-  Freshwater Emergent Wetland
-  Freshwater Forested/Shrub Wetland
-  Freshwater Pond
-  Lake
-  Other
-  Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

Catalog Favorites Visible Results

Search catalog

Map Extras

Administrative Boundaries

Tax lots

County Boundaries

Non-Regulatory Planning

Physical

Debris Flow fans

Deep Landslide Susceptibility

High Susceptibility

Moderate Susceptibility

Shallow Landslide Susceptibility

Rapidly Moving Landslides

Rapidly Moving Landslides

Beaches and Dunes Overlay Zone

Elevation



Highest Hit, OLC, 2008-19

Bare Earth, OLC, 2008-19

Aerial Photos

State Imagery

World Imagery

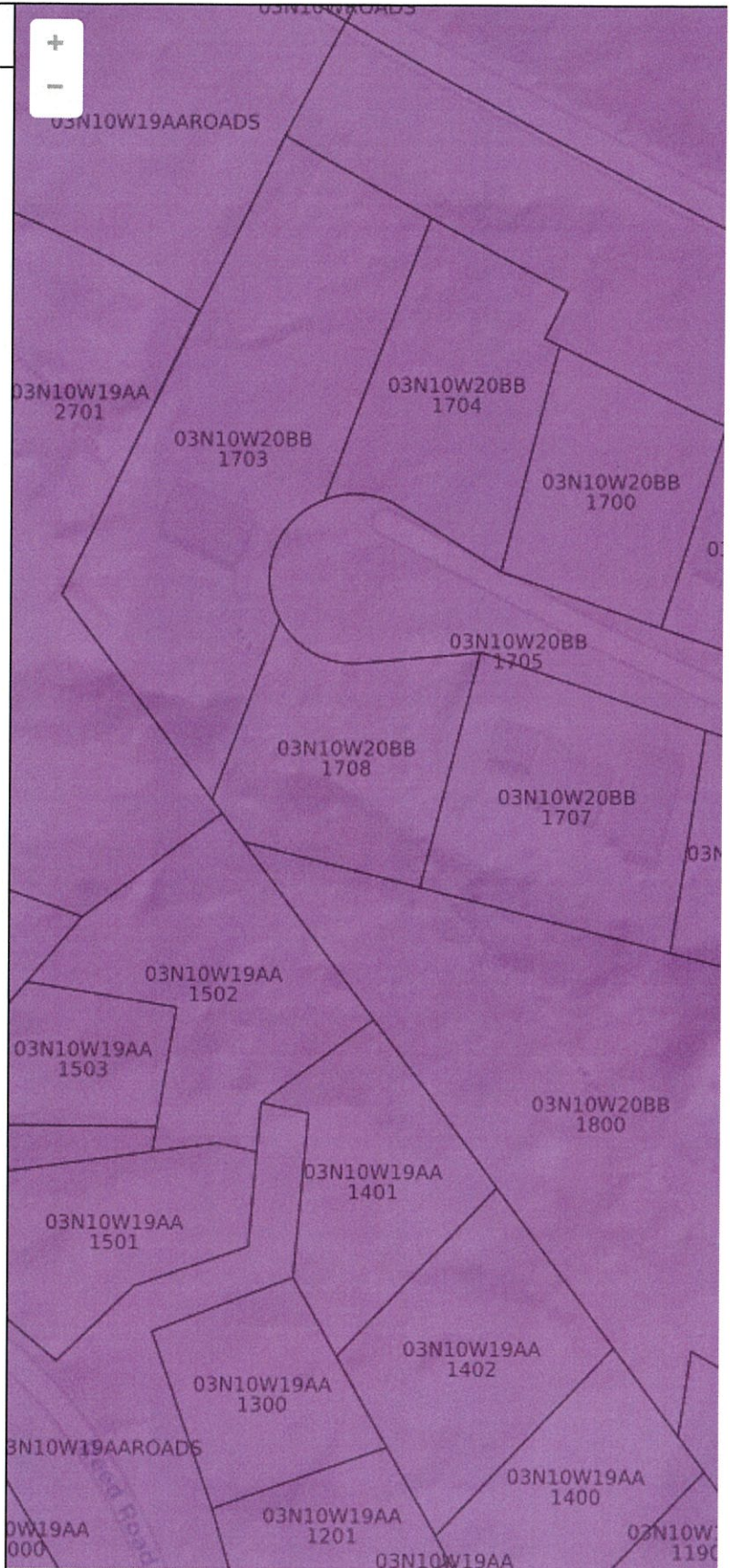
Basemaps

Carto

Light

Voyager

Esri



100 ft

© Carto, © OpenStreetMap contributors.



Tillamook County
2023 Real Property Assessment Report
 Account 392496

Map 3N1020BB01708
Code - Tax ID 5632 - 392496

Tax Status Assessable
Account Status Active
Subtype NORMAL

Legal Descr PARTITION PLAT 1993-23
 Lot - PARCEL 1

Mailing MARTIN, CLAUDIA
 1328 SECOND ST
 ROANOKE VA 24016

Deed Reference # 2022-5076
Sales Date/Price 08-09-2022 / \$260,000
Appraiser KASANDRA LARSON

Property Class 100 MA SA NH
RMV Class 100 04 OV 415

Site	Situs Address	City
------	---------------	------

Value Summary					
Code Area	RMV	MAV	AV	RMV Exception	CPR %
5632	Land 411,940		Land	0	
	Impr 0		Impr	0	
Code Area Total	411,940	180,450	180,450	0	
Grand Total	411,940	180,450	180,450	0	

Land Breakdown									
Code Area	ID #	RFPD	Ex	Plan Zone	Value Source	Trend %	Size	Land Class	Trended RMV
5632	0			NK-15	Market	116	0.39 AC		411,940
Code Area Total							0.39 AC		411,940

Improvement Breakdown									
Code Area	Year ID #	Stat Built	Class Description	Trend %	Total Sqft	Ex% MS Acct	Trended RMV		

Exemptions / Special Assessments / Notations				
Code Area	5632			
Fire Patrol			Amount	Acres
■ FIRE PATROL NORTHWEST			18.75	0.39
Fire Patrol			Amount	Acres
■ FIRE PATROL SURCHARGE			0.00	2023

Comments 09/08/05 - Request for review due to sale price. Removed adjudicated value from 1996-97 and brought RMV back to schedule, KL.
 04/12/10 - Phase 1 review - tabled land, KL.

EXHIBIT B



PLANNING APPLICATION

OFFICE USE ONLY	
Date Stamp	RECEIVED SEP 26 2023
BY:	
<input type="checkbox"/> Approved	<input type="checkbox"/> Denied
Received by:	
Receipt #:	134146
Fees:	1365.00
Permit No:	851-23-000421-PLNG

Applicant (Check Box if Same as Property Owner)

Name: Claudia Martin Phone: 503-715-6776
 Address: 1708 Twana Trace
 City: Nehalem State: OR Zip: 97131
 Email: claudia.chaconne@hotmail.com

Property Owner

Name: Claudia Martin Phone: 503-715-6776
 Address: 710 SW Skyline Blvd
 City: Portland State: OR Zip: 97221
 Email: As above

Request: Variance request for change in front yard setback
from 20 ft to 10 ft.

- | Type II | Type III | Type IV |
|--|--|---|
| <input type="checkbox"/> Farm/Forest Review | <input type="checkbox"/> Extension of Time | <input type="checkbox"/> Ordinance Amendment |
| <input type="checkbox"/> Conditional Use Review | <input type="checkbox"/> Detailed Hazard Report | <input type="checkbox"/> Large-Scale Zoning Map Amendment |
| <input checked="" type="checkbox"/> Variance | <input type="checkbox"/> Conditional Use (As deemed by Director) | <input type="checkbox"/> Plan and/or Code Text Amendment |
| <input type="checkbox"/> Exception to Resource or Riparian Setback | <input type="checkbox"/> Ordinance Amendment | |
| <input type="checkbox"/> Nonconforming Review (Major or Minor) | <input type="checkbox"/> Map Amendment | |
| <input type="checkbox"/> Development Permit Review for Estuary Development | <input type="checkbox"/> Goal Exception | |
| <input type="checkbox"/> Non-farm dwelling in Farm Zone | | |
| <input type="checkbox"/> Fore-dune Grading Permit Review | | |
| <input type="checkbox"/> Neskowin Coastal Hazards Area | | |

Location:

Site Address: 1708 Twana Trace Nehalem, OR 97131
 Map Number: 3N10208801708 1838.48
Township Range Section Tax Lot(s)

Clerk's Instrument #: _____

Authorization

This permit application does not assure permit approval. The applicant and/or property owner shall be responsible for obtaining any other necessary federal, state, and local permits. The applicant verifies that the information submitted is complete, accurate, and consistent with other information submitted with this application.

Claudia Martin
 Property Owner Signature (Required)

Sept 10, 2023
 Date

Applicant Signature

Date

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4. Variance Review Criteria

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7. Sewer Location Map
9. Water Location Map
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- 15a. Undeveloped cul de sac looking south
- 15b. Undeveloped cul de sac looking north
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- 15f. Central cul de sac with Sitka Spruce looking from property front yard
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Figures for Potential Building Envelopes

16. Building envelope with 20 ft front yard setback
17. Requested 10 ft frontward setback variance
18. 2005 modified setback diagram
19. 1992 modified setback diagram

Overview
Tax lot 183.48

Property at 1708 Twana Trace, Nehalem 3N1020BB01708

Location of the Property

This property lies on the lower slopes of Neahkahnie Mountain west of Highway 101 in an area called Neahkahnie but with a postal address of Nehalem.. It faces the ocean but in a southward direction as the lower slopes of Neahkahnie curve westward.

For ease of description in this overview, the ocean direction will be designated west, the direction to Highway 101, east, and the two adjacent properties, north and south respectively.

Description of the property and access road

The property is a total of 0.39 acres and includes the edge of a bluff/headscarp, with a vertical 50 ft+ drop, which runs at approximately 2/3 to 3/4 of the property's length from the front yard property line, as well as the land at the base of this bluff/headscarp constituting the rest of the property. (Attachment #5) The entire property slopes towards this headscarp. (Attachment #6- Topographical survey)

The property is accessed by a private gravel road, Twana Trace Rd., (Photo attachment #14.) which is maintained by the property owners on this road. The property lies between two adjacent properties, to the north and south respectively each with homes built between 25-30 years ago.

Originally Twana Trace Road was designed to end in a cul de sac type turn around with a central green area, but the portion along the eastern property line (front yard property line) and along the side of neighbors to the west was undeveloped, left as essentially a grassy path (Attachment #7, Sewer location Map /Aerial view and Photos 15a -15d.), as it was not required for access to any of the current homes. In the middle of this "cul de sac" north of my property is a natural sloped green area (Photos 15 f+g.) including a large Sitka Spruce, estimated by an arborist to be 250+ years old. The segment of the overgrown portion of the road running along the eastern/front yard property line of my property will be partially graveled in a "Y" off of the current graveled road to provide access to my house. No other property will use or ever need to use this "Y'd" segment, The natural area with the large Sitka Spruce will remain untouched. The Nehalem fire department has given approval for this plan. (Nehalem Bay Fire and Rescue District Building Approval attached # 10).

When looking from the property eastwards, towards Highway 101, all one sees is the natural area with the large Sitka spruce (Photos 15 f+g.). In other words, no one directly east of this property sees the property, due to the vegetation, the large Sitka Spruce and the slope of the terrain. This is instrumental in this variance request as no other properties nor their access or views from east to west will be impacted in any way. The two adjacent properties on the right and left, are up-slope from this property. Placing the future building further up-slope on the property, as would happen with a granting of a setback variance would benefit both of these properties by lessening any east-west

ocean view impedance for them.

Topography of the property

The western headscarp on this property follows a curve, and when measured from the eastern/front yard boundary of the property, 121 ft on the south side but only 73 ft on the north side respectively. A safe setback from the bluff for a building has been determined to be 50 ft, per geotechnical reporting (see HLB Geotech 2005 survey and 1989 Geotech survey letter attached, #11 and #12).

Using this 50 ft setback from the bluff and the standard 20 foot setback from the road, the area that is a potential building envelope is triangular. The northern point of this triangle is not usable in terms of any reasonable building. Taking this point out of any plan, leaves a building footprint not congruous with normal architectural standards; a kind of scalene trapezoid, further complicated by the sloping of the property (see 2023 Topographical Survey/Bayside Survey). Changing the eastern/front yard setback along the undeveloped cul de sac road from 20 ft to 10 ft, which is being requested in this variance, would allow for a standard building envelope and at the same time decrease the negative environmental impact of a "spread out" building by allowing for a more compact square or quadrangular building. This problem and solution to it has been recognized by the two prior owners as seen in Attachments #16–18, from 2005 and Attachment #19. 1992 respectively; a front yard setback variance was recommended in both geotech reports.

The plan for this house is to be a relatively small two bedroom residence of 2000-2500 sq ft as the goal. Consideration for minimal environmental impact on the land will be a priority and will be better achieved by a more compact structure with a ten foot variance setback would allow for as opposed to a spread out structure designed to accommodate the unusual potential building envelope with a 20 ft setback. As the property is on a relatively steep slope, ending in the headscarf, drainage would also be improved with a more compact building and retaining vegetated ground. The building could also then potentially be placed further away then the required 5 ft setback from the property line to the south, decreasing impact on the southern neighbor.

Review Criteria for Variance

(1) Circumstances attributable either to the dimensional, topographic, or hazardous characteristics of a legally existing lot, or to the placement of structures thereupon, would effectively preclude the enjoyment of a substantial property right enjoyed by the majority of landowners in the vicinity, if all applicable standards were to be met. Such circumstances may not be self-created.

Response - A variance to have a 10 ft front yard setback instead of the standard 20 ft front yard setback is requested because of the geographic and topographic circumstance of the property. The property has an extreme slope, up to 30% (noted in 1992 Geotech report) including a curved bluff/headscarp with a vertical drop of more than 50 ft. This bluff is at approximately 2/3 - 3/4 way from the front yard property line. The remainder of the property lies at the base of the drop and is not land that can be developed. This headscarp, in particular, constitutes a geologic/topographic circumstance as a 50 ft setback from its edge is required for any construction, based on geotechnical survey reports, to avoid any hazard. This 50 ft, "backyard" setback, in conjunction with a standard 20 ft front yard setback, severely limits the area of the property upon which a building can be placed. The area of the property that can be built upon with these setbacks is a triangular shape with dimensions not normal to a standard residential building norms and would effectively preclude the enjoyment of a substantial property right enjoyed by all of the other landowners on Twana Trace Rd if applicable standards were to be met. This circumstance is geographic and topographic is is not self created.

Please see attachments included under the headings of B. General Figures, C. Geotech reports, D. Photos and E. Figures for Potential Building Envelopes

In more detail:

The topography of the 0.39 acre property at 1708 Twana Trace consists of a relatively steep slope ending in a bluff/headscarp with a vertical, more than 50 feet, drop. This bluff is at approximately the 2/3 or 3/4 point of the property in the westward direction. The bluff and the eastern boundary of the property are curved so that the much of northern portion of the property when accounting for the 50 ft bluff setback and the 20 ft property line setback does not allow for any building.

The front yard property line at the access portion of the private road is also curved, so adherence to the 50 foot back yard geologic setback (which is not being questioned), in conjunction with standard 20 foot front yard set back creates an essentially unviable, shaped building envelope. (see Fig 1) Decreasing the front yard setback from the access road would allow for the building to fit into a normalized square/rectangular building envelope. It would also allow the construction to be set in a more compact geometry, as opposed to spreading along the entire span of the current allowable building area, therefore decreasing the environmental impact on the property from construction and the long term placement of the building. Because the property is sloped as described, minimizing the environmental impact is a very important

consideration. I would like to respect the natural area and build as green as possible and minimize disruption and soil erosion to the land; achieve effective long term drainage by maximizing vegetation. The variance request is not made to provide more square footage to any build but to make the residence built more compactly, decrease the driveway surface area (which will be on a slope); both would secondarily minimize the disruption ecologic disruption of the land.

Preliminary discussions with the contracted architect made it clear that obtaining this variance would not only allow for a reasonable design but would maximally protect the environment of the property.

(2) A VARIANCE is necessary to accommodate a use or accessory use on the parcel which can be reasonably expected to occur within the zone or vicinity.

Response - This variance is necessary to accommodate a use on the parcel which can be reasonably expected to occur within the zone or vicinity.

The plan is to build a personal residence on this property of between 2000-2500 sq feet. The property is located in a residential zone comprised of single family dwellings, all of greater square footage. In order to build a home in a reasonable building foot print given the required back yard setback from the headscarp and the topographic sloping of the property, and to minimize ecologic disruption to the land the requested 10 foot front yard setback would be required.

This would not impact any of the properties on Twana Trace Rd.

Access to the property is via Twana Trace Rd, a private road maintained by all of the owners of properties (a total of 8 properties including undeveloped lots) situated on this road. This property, 1708 Twana Trace Rd, is located, along with one other house, at the northern dead end part of this private road.

Originally Twana Trace Rd was designed to end with a cul de sac type turn around including a central natural area in which there is a large Sitka Spruce, estimated to be 250+ years old, and dense brush vegetation and smaller trees. The far western portion of this turnaround as well as the portion bordering the front yard of this property was not developed and allowed over the past decades to become grass/weed covered as no one, including the owners of the northern property used this for access or turn around. No one living on Twana Trace Rd currently uses, nor will ever use, the portion of the road bordering the front yard property line at this property for which the setback variance is requested. Access to this property will be through a re-graveling of the southern portion of this cul de sac turn around, creating a Y off of the straight and graveled portion of Twana Trace Rd. This plan has been reviewed by the fire department for adequate access for their purposes and has been approved (letter included)

The natural central area described above, through the dense vegetation and the large Sitka Spruce, visually blocks any view of the 1708 property from the upper portion of the private road and the two vacant lots which are eastward and "up slope" from Twana

Trace Rd itself. A variance in the setback to 10 ft would not affect anyone's view, access or any other aspect.

Given:

1. That this Y'd portion of the private road, from which the setback would be calculated, only goes to the property for which the front yard variance is being requested and would not be used by any of the other property owners,
2. That this Y'd portion of the road and the front yard property boundary cannot be seen from the eastward properties because of the vegetated central area,
3. That because this property lies at the dead end of Twana Trace Rd. along with my north east neighbor who has his own access independent of my property boundary and its access:

there will be no adverse effect on any of the properties on the Twana Trace. Their access, their views nor any other aspect of consideration would not, in any way, be affected by a variance of the front yard setback from 20 ft to 10 ft. In addition, building the house with a 10 ft setback would, as opposed to a 20 ft setback preserve more of the north-south views that the adjacent properties have enjoyed over the years. This variance will allow for a more compact build, including a smaller length of driveway minimizing the ecologic impact of placing a residence on the parcel.

(3) The proposed VARIANCE will comply with the purposes of relevant development standards as enumerated in Section 4.005 and will preserve the right of adjoining property owners to use and enjoy their land for legal purposes.

1. To ensure the availability of private open space.

Response - This front yard setback variance request complies with the availability of private open space. It will also provide a maximum maintenance of north-south views for neighbors by setting the house back by ten feet.

2. To ensure that adequate light and air are available to residential and commercial structures.

Response - Adequate light and air will be available to the planned residential structure as per zone standards and the requested front yard setback variance will not affect a change in this.

3. To adequately separate structures for emergency access.

Response - This front yard setback variance request will not affect any emergency access to the planned single residential structure. It will not affect any emergency access to the surrounding properties.

4. To enhance privacy for occupants of residences

Response - This front yard variance request will enhance the privacy of the occupants of the planned single residential structure by allowing the building to be set in a more

compact fashion and to be set further from the side yard property line to the south resulting in the building be more out of the view of the adjacent neighbors. These same neighbors will equally have enhanced privacy with this setback variance. As stated, with this variance, the residence could be placed further into the property on the south side (i.e. somewhat more centrally along the front yard property line) than the currently zoned 5 ft setback on the south line, adding to that neighbor's privacy.

5. To ensure that all private land uses that can reasonable expected to occur on private land can be entirely accommodated on private land, including but not limited to dwellings, shops, garages, driveways. parking areas for maneuvering vehicles for safe access to common roads, alternative energy facilities and private open spaces.

Response - This front yard setback variance will comply with all reasonable uses that can be expected to occur on private land, as listed above, can be entirely accommodated on the private land.

In addition, the front yard setback variance will allow for less disruption to the natural environment (e.g. decreased length of driveway to the garage structure), important on a site such as this which is steeply sloped and at greater risk for erosion.

6. To ensure that driver visibility on adjacent roads will not be obstructed.

Response - This front yard setback variance request will have no effect on any driver's visibility on the adjacent road. The property will be the only residence on this portion of the road, which dead ends at the property.

7. To ensure safe access to and from common roads.

Response - Safe access to and from the common road will be ensured by this front yard setback variance. There will be no change in the safe access with this variance; the portion of the road along the property dead ends at the property and only the occupants of the property will use this portion of the road. There will be no change in the current safe access to and from common roads.

8. To ensure that pleasing views are neither unreasonably obstructed nor obtained.

Response - This front yard setback variance will not unreasonably obstruct nor unreasonably obtain pleasing views.

9. To separate potentially incompatible land uses

Response - The area of the property is sound single family residential only and there are no incompatible land uses that will occur with this front yard variance for a planned single family residence.

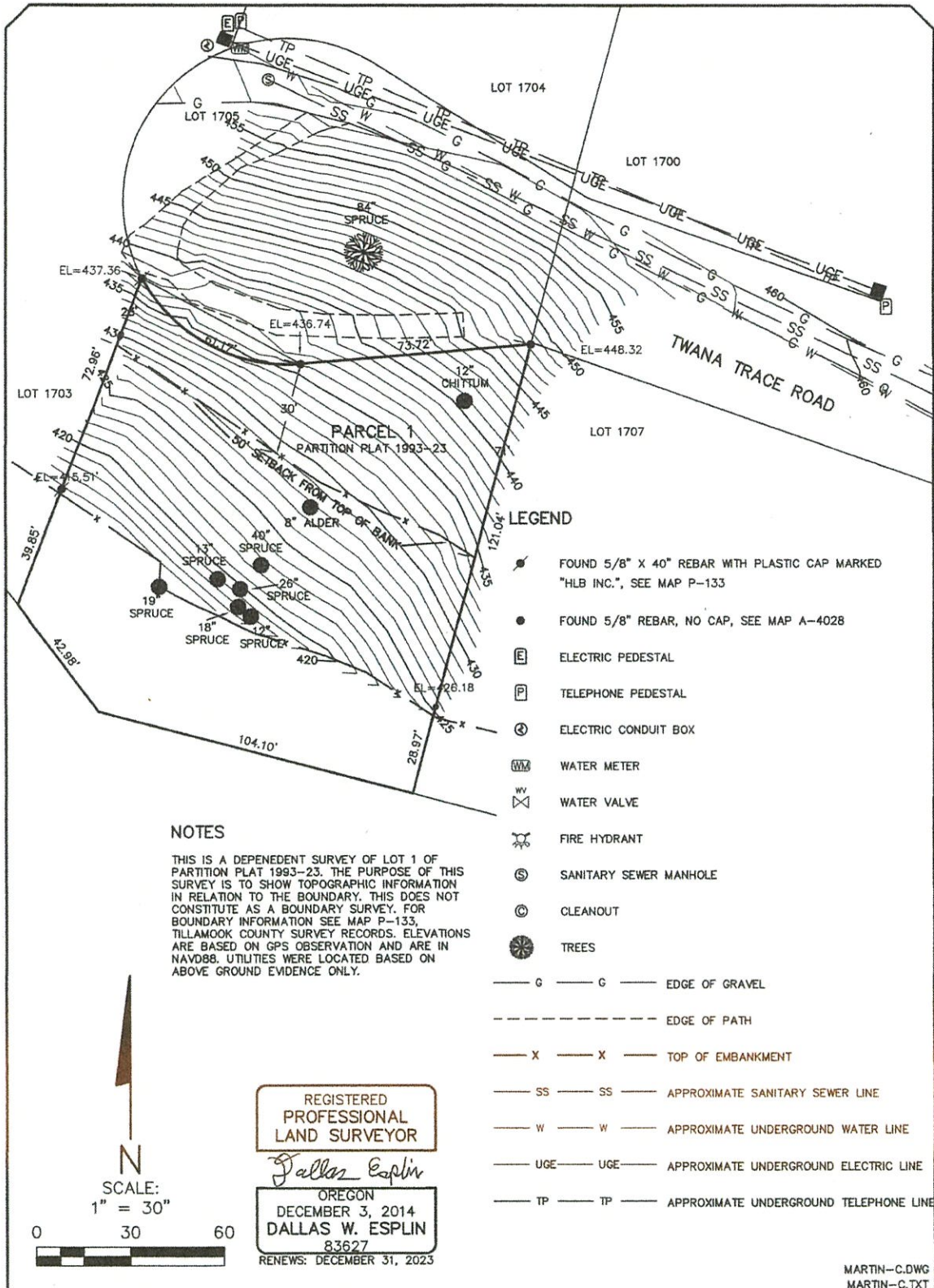
10. To ensure access to solar radiation for the purpose of alternative energy production

Access to solar radiation for the purpose of alternative energy production will be ensured.

Summary for #3: The proposed front yard setback variance will comply with the purposes of all relevant development standards noted in Section 4.005 and will preserve the right of adjoining property owners to use and enjoy their land for legal purposes. Sections 1-10 under Section 4.005 will all be complied with/have no negative impacts upon, with this requested variance

(4) There are no reasonable alternatives requiring either a lesser or no VARIANCE.

Response - The property creates a circumstance both geographic and topographical, as well as hazardous, that does not allow for a reasonable building geometry within the building envelope given a 20 ft front yard setback along with the 50 ft backyard setback from the headscarf. Note that the actual back yard property line is beyond the base of the headscarf on unbuildable land. This 50 ft setback starts with the headscarp, which is approximately 1/3 way back from the back property line. The steep slope of the property and bluff with a vertical drop of 50 feet within the property, along with the curve of this bluff, results in a topography of the site rendering much of the acreage unbuildable. A majority of properties do not have a bluff with a vertical drop necessitating a 50 ft back yard setback, with, in addition, a portion of the acreage at the foot of the bluff. With a standard 20 ft front yard set back, the combined setback total is 70 ft representing a large portion of the property. The topography and geographic setting will not change. Geotech surveys from the past in 1989 and in 2005 (2005 included as an attachment along with letter from 1989) have documented no change in the topography and the 50 ft back yard setback will remain unchanged to avoid any safety or hazardous conditions with a build. There is no reasonable alternative that would allow for the enjoyment of a substantial property right enjoyed by the majority of landowners in the vicinity of all applicable standards were to be met. The circumstance is geologic and topographic and is not self created.



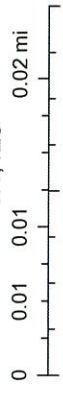
ArcGIS WebMap



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- Accounts
- ssCleanOut
- ssGravityMain
- Zoning
- ssManhole
- Taxlots

1:1,128



Lot 1708 Map

1 message

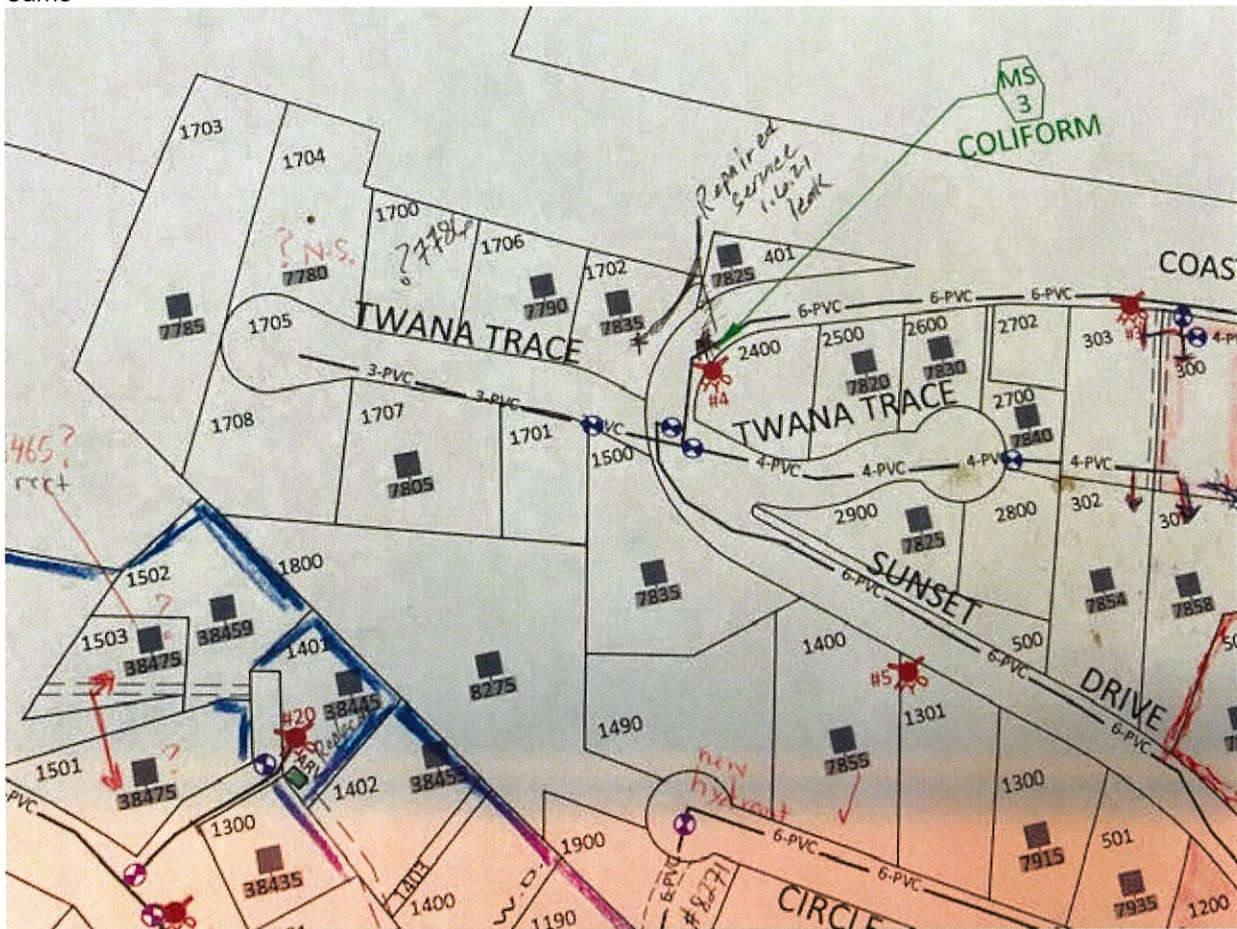
NWD Manager <nwdmanager@nehalemte.net>
To: tosha@coastlivingre.com

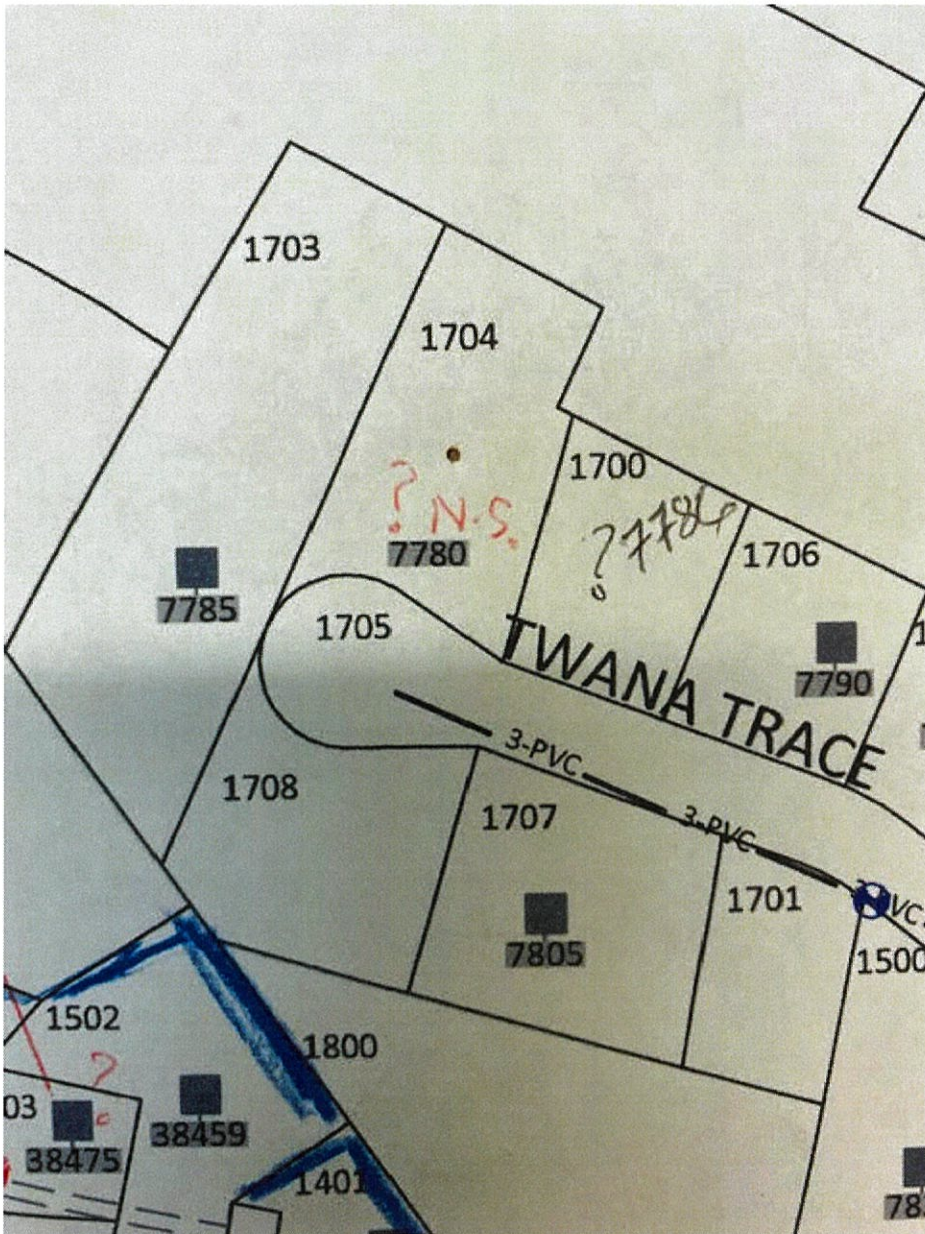
Mon, Jul 18, 2022 at 1:51 PM

Hi Tosha,

The below map shows you where the PVC water lines are for Lot 1708.

Thank you,
Carrie





General Manager
Neahkahnie Water District
9155 Nehalem Rd., Nehalem, OR 97131
Ph: 503-368-7309
FAX: 503-368-6900

Nehalem Bay Fire & Rescue District Building Review & Approval Form

36375 Hwy 101 N.
Nehalem, OR 97131
Office 503-368-7592
Fax 503-368-7580

This form must be completed and signed by the Fire District prior to applying for a Building Permit or Manufactured Dwelling Placement Permit.

Township Range Section 1/4 Sect 1/16 Sect Tax Lot# (00500)
3N 10 20 B B 01708

Property Address:
Lot #01708 Twana Trace

Legal Property Owner(s):
Claudia Martin

Property Owner's(s) Mailing Address:
1328 Second Street Roanoke, VA 24016

Form Requested by:
Claudia

Requestor's Relationship to Property:
Owner

Requestor's phone # and email:
503-715-6776 claudiachaconne@hotmail.com

Proposed Development/Construction
Residential

Water Source:
Water District

Water District:
Neahkahnie

-----Fire District to Complete Information Below-----

1. Does access road comply with Tillamook County Fire Defense Board Access Guidelines?



Yes, it complies.



No, it does not comply. See comments section below

2. Is there a hydrant within 1000' of the property?



Yes, approximate GPM 1,030

Hydrant # NKN 4



No, Fire District water shuttle operation is needed

Comments: Owner agrees to widen road at top of property to the minimum standard set forth in the TCFDB Road Access Guidelines to 16' width, including shoulder.

3. Action Taken:



I have reviewed the information regarding the property listed above and approve.



I have reviewed the information regarding the property listed above and **do not** approve for the following reason(s):

Printed Name: Captain Frank Knight III

Signature: *Frank E. Knight III*

Date: 6/15/23

HLB & Associates

I N C O R P O R A T E D

Surveying ♦ Civil Engineering ♦ Planning

G-1078

November 1, 2005

Morgan

Pitt Reeves & O'Shaughnessy Rice
3112 North Lawrence
Tacoma, WA 98407

RE: Engineering Geologic Hazard Report for Tax Lot 01708, Map 3N 10 20BB, Parcel 1 of Partition Plat 1993-23, Neah-Kah-Nie, Tillamook County, Oregon (Twana Trace West)

Dear Mr. Reeves and Ms. Rice:

At your request, we have completed our engineering portion of the site investigation of the subject property using available maps and previous reports of nearby properties completed by our firm. This investigation also included a site inspection of the subject property by Jason R. Morgan, PE, and Ronald Larson, PE, of HLB and Warren Krager, Engineering Geologist of PSI, Inc. Mr. Krager has investigated and addressed the geologic conditions of the site. HLB & Associates, Inc. has then developed the engineering recommendations related to construction on the site. The two reports combined constitute the required Geologic Hazards investigation required by Tillamook County. This engineering portion of the report is prepared for your use in the construction of a single-family home on the property. The standards set forth herein should be incorporated into the development plans for that project.

In preparation of this current report, our firm has reviewed the following previous reports on this property:

1. An original geotechnical investigation and report (dated July 27, 1989) and addendum (dated August 17, 1989) were prepared by John K. McDonald, PE of John McDonald Engineering in 1989 for TL 01704; in 1989 TL 01704 included what are now TL 01704 and TL 01708. The 1989 report recommended a minimum setback of 50 feet from the crest of the scarp.
2. An addendum report was completed by Ronald G. Larson, PE of HLB & Associates, Inc., dated June 16, 1992. That addendum briefly reviewed the property and the previous McDonald reports and concluded that there had been no change in the site conditions since 1992.

SITE CONDITIONS

The site and its geologic conditions are generally as described by Mr. Krager in his report. Mr. Krager has investigated the geologic hazards on the site and reported those hazards to you in his report. (Mr. Krager's 10-page report, dated June 15, 2005, is attached for your use.) The property is a roughly rectangular site fronting on a private road to the North. The private road, known as Twana Trace West (TL 01705), is accessed from Highway 101 via Sunset Drive. The property fronts the Twana Trace cul-de-sac to the North for about 167 feet, and is as deep as 150 feet at the eastern property line. At the

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Gearhart Office
4253 - A Highway 101 North
Seaside, OR 97138
(503) 738-3425 ♦ Fax (503) 738-7455

narrowest point, the property is about 126 feet deep. The adjacent properties in each direction have been developed, but the structures on the properties to the South and Southwest are a few hundred feet away. See the attached portion of the assessor's map for the property's dimensions and orientation.

The private road is a cul-de-sac known as Twana Trace West, and is improved with gravel to a width of only about 10 feet. The useable portion of the gravel road is located on the extreme North side of the private road right-of-way. The balance of the existing gravel turn around on the South side of the cul-de-sac is only used in cases of emergency. The vast majority of the right-of-way of this cul-de-sac is unimproved. Utilities are available in the private roadway.

Elevations on the property vary from about 350 feet at the southwest corner to 415 feet at the front of the property boundary along Twana Trace West. The property slopes down to the Southwest, descending at about 15 to 25 percent from the front property line. As shown by a dotted line through this property on the assessor's map, a steep headscarp is located on the property about 85 feet South of the front property line at the closest location.

The site is generally vegetated with a very thick underbrush of blackberries, thistleberry, sword fern, grasses, and other species of plant typical to the area. A few spruce trees are remaining near the crest of the headscarp. At the time of our site investigation, a few paths through the underbrush had been cleared to allow access.

The site is in a 110 miles per hour basic wind gust speed zone, unprotected from the ocean winds (Exposure 'D' as per the 2005 Oregon Residential Specialty Code (ORSC)); therefore, the building must be designed to withstand the minimum required lateral wind gust loads. In general, one- and two-story wood frame construction designed to withstand 110 miles per hour Exposure 'D' wind loading also will withstand even severe earthquake loads. According to the IBC and ORSC, structures in Exposure 'D' are typically required to have an engineering analysis calculation of lateral wind loads. Such calculations must be submitted with the building permit application.

FINDINGS AND HAZARDS ANALYSIS

The primary relevant geologic hazard on this site relates to: 1) potential instability of landslide head scarp; 2) boulders in excavation; 3) foundation support considerations; 4) drainage control, and; 5) regional seismicity.

Mitigation of these hazards is discussed in the development standards addressed herein and in the detailed recommendations set forth in Mr. Krager's report.

The North Oregon Coast is defined by the 2005 ORSC as lying within a D₂ Seismic Design Category. As such, structures built in this area must, at a minimum, comply with the structural requirements for the D₂ Design Category. Strong seismic acceleration can be expected to result in liquefaction of weak saturated sediments, allowing for abrupt settlement of foundations. Also, such severe acceleration will likely result in widespread landsliding and no slope, however gentle, can be considered immune from failure during these conditions.

MANDATORY DEVELOPMENT STANDARDS

In addition to the required standards of Section 4.070 (2) of the Tillamook County Land Use Ordinance, the following site specific standards shall also be required:

A. Development Density - This property should be developed for uses consistent with current zoning (outright or conditional uses). All development should take place in conformance with all other requirements of the Tillamook County Land Use Ordinance or approved variances, as applicable.

The property is zoned as NK-15 in the Neahkahnie Urban Residential Zones with a minimum parcel size of 15,000-square feet. See Section 3.300 of the Tillamook County Land Use Ordinance.

B. Structure Foundation and Road Location – The setbacks described by the engineering geologist on page 3 of his report must be followed. All footings for the building or overhanging decks must be set at least 50 feet from the top of the scarp descending to the South. Site access should take place from the private road, Twana Trace West.

We recommend that the house be located upslope and as close to the right-of-way of Twana Trace as permissible. The house structure should be placed upon this parcel in accordance with County setback standards. Footing design and the depth of all footings should be in accordance with Development Standard E noted below.

We strongly recommend that setback variances be applied for to create a building area further from the crest of the scarp. A front-yard setback variance should be applied for from Tillamook County and we recommend that such a variance be approved. Additionally, we recommend that the private road right-of-way and turn around be modified to change the cul-de-sac into a 'fish-tail' turn around. A detailed plan can be prepared to update the property lines and create a useable turn-around area for private vehicles and for emergency vehicles. To accomplish this reconfiguration, a detailed topographic survey should be completed of the cul-de-sac and building area on this property.

To change the layout of this road right-of-way and this property, we recommend discussion and coordination with the owners of the roadway, as well as with Tillamook County Department of Community Development, Tillamook County Road Department and the Manzanita Department of Public Safety. All of those agencies will have input to any changes to the road and this property. The Manzanita Department of Public Safety currently provides fire protection services to the Neah-Kah-Nie area.

C. Land Grading Practices - All excavations for driveway and house foundation construction should be done during reasonably dry weather (while it is not actually raining). Any cut slopes should be retained using temporary or permanent means of stabilization. All excavated material should be removed from the property. No fills should be constructed on this property unless necessary for access.

Any cut slopes shall be graded and dressed to a maximum 2:1 slope and revegetated as noted below. If this option is not viable, a retaining wall, designed by a licensed engineer, can be constructed according to the standards set forth herein. No grading of the remaining slope, beyond that required for construction shall take place. Also, no grading should be performed within the 50-foot setback from the top of the

landslide scarp; a temporary construction fence should be installed at the 50-foot setback line during construction to aid in identifying the 50-foot setback area.

Do not stockpile any soil within 50 feet of the top of the landslide headscarp. Within 50 feet from the top of the landslide headscarp, the existing ground should not be disturbed.

If grading is to be completed as part of the improvements to the roadway, all fills should be constructed as engineered fills.

D. Vegetation Removal and Revegetation - All areas disturbed by construction should be promptly revegetated in order to reduce the potential for erosion. On the relatively flat areas, removal of blackberries and other invasive species is permitted on the property. We do recommend that removal of grasses and other ground cover be limited to areas that are needed for construction or that will be landscaped. The recommended revegetation program, from the USDA SCS Interagency Seeding Guide, for areas such as this is as follows:

Do not remove any vegetation on the headscarp to the Southwest. Branches may be removed from evergreen trees on the scarp to enhance views. We recommend consulting a professional tree removal company or arborist to ensure that the tree will survive after the removal of limbs is completed.

Seed disturbed areas with the following grass mixture:

<i>Annual or perennial</i>	<i>Application rate, pounds of seed per acre</i>
Hybrid Rye	3
Tall Fescue	18
Creeping Red Fescue	8
Bentgrass	1
Big Trefoil	4

Use a 16-20-0 fertilizer to speed the establishment of the cover material. To further contribute to the stability of the disturbed areas, jute matting, straw cover, or other stabilization product such as SoilGuard® should be placed over the soil to help protect against erosion, before the seeds are allowed to germinate. In addition, planting shrubs and trees, such as salal, red elderberry, barberry, Beach Pine, Escallonia, Cistus, Ceanothus, etc., will further contribute to the long term stability of the site.

E. Foundations - The foundation should be a continuous reinforced concrete perimeter system, using reinforced concrete foundation wall where required. If a crawl space is planned beneath a wood first floor, we recommend the use of continuous, reinforced concrete stepped footings running between perimeter foundation walls in order to allow for continuity of the reinforced concrete footings. Isolated footings should not be used within the perimeter foundation walls. Interior footings should be integral with the continuous perimeter footings. The first floor joists should then be supported either with conventional posts and beams or pressure treated pony walls on continuous strip footings tied together with the continuous perimeter footings.

The bottom of all footings and pads should be excavated to below any organic material and previously placed fill material. Footings should rest at least 2 feet into the rocky soil on the site (approximately 4 feet below the existing ground surface). There is a potential for buried topsoil or isolated pockets of organic material that extend deeper into the bearing material than in other locations. All organic debris and topsoil should be removed from the building footprint, regardless of depth.

The site topography lends itself toward the use of a stepped foundation design. Alternatively, a daylight basement may be constructed to utilize the existing slope. However, subsurface conditions may result in a relatively shallow foundation being the most practical solution for the property. Digging through soil containing large rocks may prove difficult and costly, though the neighbor immediately to the West reportedly found subsurface rocks that were consistently the size of the rocks exposed on the surface.

Removal of large rocks may also result in excavating to below the desired foundation depth. In such a case, the resulting hole should be filled with an engineered fill. We recommend filling the resulting hole with $\frac{3}{4}$ "- crushed rock and compacting that material in level lifts not to exceed 8 inches in depth.

Due the rocky terrain and rocky soil on the site, we do not recommend the use of soil anchors, piles or auger cast piers. All foundations should be constructed by using excavation of the soil to reach bearing material and depth. Construction of a concrete basement slab set on cut material is acceptable. We do not recommend the use of concrete slab on grade construction built upon fill. Use structural slabs on supports when possible.

When excavation takes place, it is recommended that a representative of PSI, Inc., or an equivalent geotechnical specialist or engineering geologist, be consulted in order to determine whether or not the appropriate materials have been exposed for foundations. We believe that such an inspection is extremely important and, therefore, we recommend that inspection of the foundation excavation prior to footing construction be a mandatory requirement for construction.

Soil bearing pressures at the bottom of all footings should not exceed 1,500 pounds per square foot at a depth of 2 feet below organic or previously placed fill material.

Any retaining walls should be designed according to the following criteria:

Allowable Soil Bearing Pressure, psf (after compaction is completed)	1,500
Lateral Soil Bearing Pressure on Unrestrained retaining walls with level backfill, pcf/ft of depth, equivalent fluid weight (Active pressure excluding surcharge effects)	40
Lateral Soil Bearing Pressure on Restrained retaining walls with level backfill, pcf/ft of depth, equivalent fluid weight (Active pressure excluding surcharge effects)	50
Lateral Soil Bearing Pressure (Passive), pcf/ft of depth	300
Friction Angle, degrees	29°
Maximum unit weight, pcf	120
Coefficient of Friction	0.35

Backfill behind all retaining walls should be clean, well-drained, imported, select granular backfill. Native material for back fill behind retaining walls will not be acceptable. All retaining walls require foundation drains as described in Section H below.

F. Driveway Location and Design - The driveway should be constructed such that the roadbed is entirely on cut material or engineered fill material. Access should be from the private road known as Twana Trace West; the best location should be determined during site planning. Driveway design standards should include the use of a geo-textile support fabric, a minimum of an 8-inch thick layer of pit-run base rock and a 3-inch thick layer of 3/4"-minus crushed rock surfacing.

Improvements to the Twana Trace West private road should be coordinated with the Tillamook County Road Department. All grading should be completed during dry weather. Erosion control measures should be determined during design of the turn around.

G. Stormwater Management, Runoff and Drainage - All roof drainage should be collected with eave gutters and downspouts and piped to discharge on the surface in the area adjacent to the house. Based on the proposed building area laid out in the 1992 reports, the open area to the West of the building would be the preferred location for disposal. An alternative location may be developed if the building area is modified by changes to the front property line. In any case, the water should not be discharged upslope of the structure or within 50 feet of the headscarp to the Southwest. Accumulated surface drainage also should be collected and discharged adjacent to the structure. The complete roof drainage system, including roof gutters and downspouts should be installed immediately after the roof sheathing to protect the ground from erosion during construction.

The storm water should be diffused into the slope adjacent to the building, at least 10 feet from the foundations of any building or deck. Use a perforated pipe, set on the surface of the ground and sloped at less than 2 percent away from the building outfalls. Cap the outfall end of the perforated pipe. The pipe may be placed on the surface or buried in topsoil with a depth to invert of no more than 12 inches. The

diffusion system should be sized appropriately to avoid back ups resulting in heavy localized discharges. Multiple lines of diffusion pipe may be laid on the slope, provided that at least 10 feet of clearance is maintained between pipes.

The use of a seepage trench that is 3 feet deep, as described in 1989 report, is no longer recommended. Water should be discharged on or near the ground surface, away from the building and the crest of the scarp.

To diffuse the stormwater run-off, we recommend installing fabric-covered perforated pipe in a shallow trench that is less than 15 inches deep and located entirely within an area of undisturbed organic topsoil. The trench should be backfilled with rounded drain rock backfill and capped with native soil; do not mechanically compact. Install the pipe with a fall of less than 2 percent and avoid any local bellies.

The vegetated area downslope should be protected from erosion and siltation due to runoff from the construction site by the use of silt fencing or "bio-bags" during construction. Specifically, silt fencing should be placed along the downslope sides of the disturbed surface area and "bio-bags" (or hay bales) should be placed at the locations of visible discharge. We also recommend that a rock construction entrance pad be constructed to avoid tracking of soil onto the roadways. These temporary measures should be left in place and properly maintained until all surface revegetation is established. Driveway surface drainage should be collected and transmitted to the diffusion system.

During construction, the excavated area should be graded and maintained to avoid standing water as much as possible. If possible, the site should be graded to prevent standing water in the excavated area during construction of the foundation and all subsequent activities. Alternatively, the foundation drain pipes, described below, should be installed as soon as possible after the foundation is constructed.

H. Foundation Drains - Foundation drains should be installed on the uphill side of all continuous concrete retaining wall footings. The use of a fabric covered, perforated drainage pipe, such as ADS DrainGuard®, or equal, is recommended. The backfill around and above the foundation drains should be clean, washed, drain rock to ensure good drainage. The drain rock backfill should extend from the foundation drains (at the bottom of the footings) to 18 inches below the finish ground surface; cover the trench with native material to prevent surface water inflow. All foundation drains should discharge toward the lowest point along the wall. All roof drainage and surface area drainage piping should be separate from the foundation drainage piping.

The foundation drains should be piped to discharge downslope from the house and any deck structures. We recommend discharging the foundation drains to daylight as soon as possible downslope of the structure.

J. Topographic Survey – We strongly recommend having a topographic survey of this property completed. Having a topographic survey of the property will allow for a house design and site plan specifically for this property. A topographic survey should extend from the top of the headscarp to the northern side of the Twana Trace West property (TL 01705). For this property, the topographic survey should be completed after the initial clearing (but not grubbing) has been completed; roots and stumps should remain intact until excavation work for the structure.

K. Site Plan – We further recommend that the topographic survey be used to develop a site-specific development site plan. The development of a detailed site plan should include all grading, driveway slopes, road improvements, house location, drainage plan, and any retaining walls. Development of a detailed site plan prior to construction will reduce costs, unexpected costs and delays.

SUMMARY FINDINGS AND CONCLUSIONS

1. The proposed use is currently single family residential. There are no development plans currently available for review at this time. There are no immediate adverse effects on adjacent properties from future house construction. Future development may result in increased stormwater runoff or decreased runoff quality on adjacent properties. Future development proposals should be further evaluated in the context of the recommendations of this report, at the time of issuance of a building permit.
2. Hazards to life, public and private property, and the natural environment which may be caused by the proposed use are discussed herein and addressed in each of the development standards.
3. The methods for protecting the surrounding area from the adverse effects of the proposed development are set forth in each of the development standards.
4. Temporary and permanent stabilization programs and maintenance of new and existing vegetation is discussed in Development Standard "D".
5. The proposed development of this parcel according to the mandatory standards set out herein will result in the new parcels and future developments being adequately protected from the above described reasonably foreseeable ordinary hazards, although not necessarily from major earthquake, the possibility of which is discussed herein.
6. The proposed development of this parcel, according to the recommended standards, is designed to minimize the adverse environmental effects.

LIMITATION

The engineering portion of this report is based on a site inspection of the subject property and vicinity and a review of the site topography. The engineering conclusions and recommendations in this engineering portion of the report are based upon the geologic conclusions presented in the geologic report prepared by PSI. The engineering conclusions and recommendations presented herein are believed to represent the site and are offered as professional opinions derived according to current standards of professional practice for a report of this nature, and no warranty is expressed or implied. This report has been prepared for the timely use of the above addressee and parties to the pending development of the subject property, and does not extend to the activities of unidentified future owners or occupants of the property for which the writer bears no responsibility.

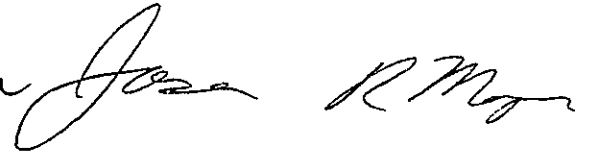
Should you have any questions regarding our investigation and this report, please contact our office.

Very truly yours,

HLB & Associates, Inc.



Ronald G. Larson, PE, PLS
Principal Engineer



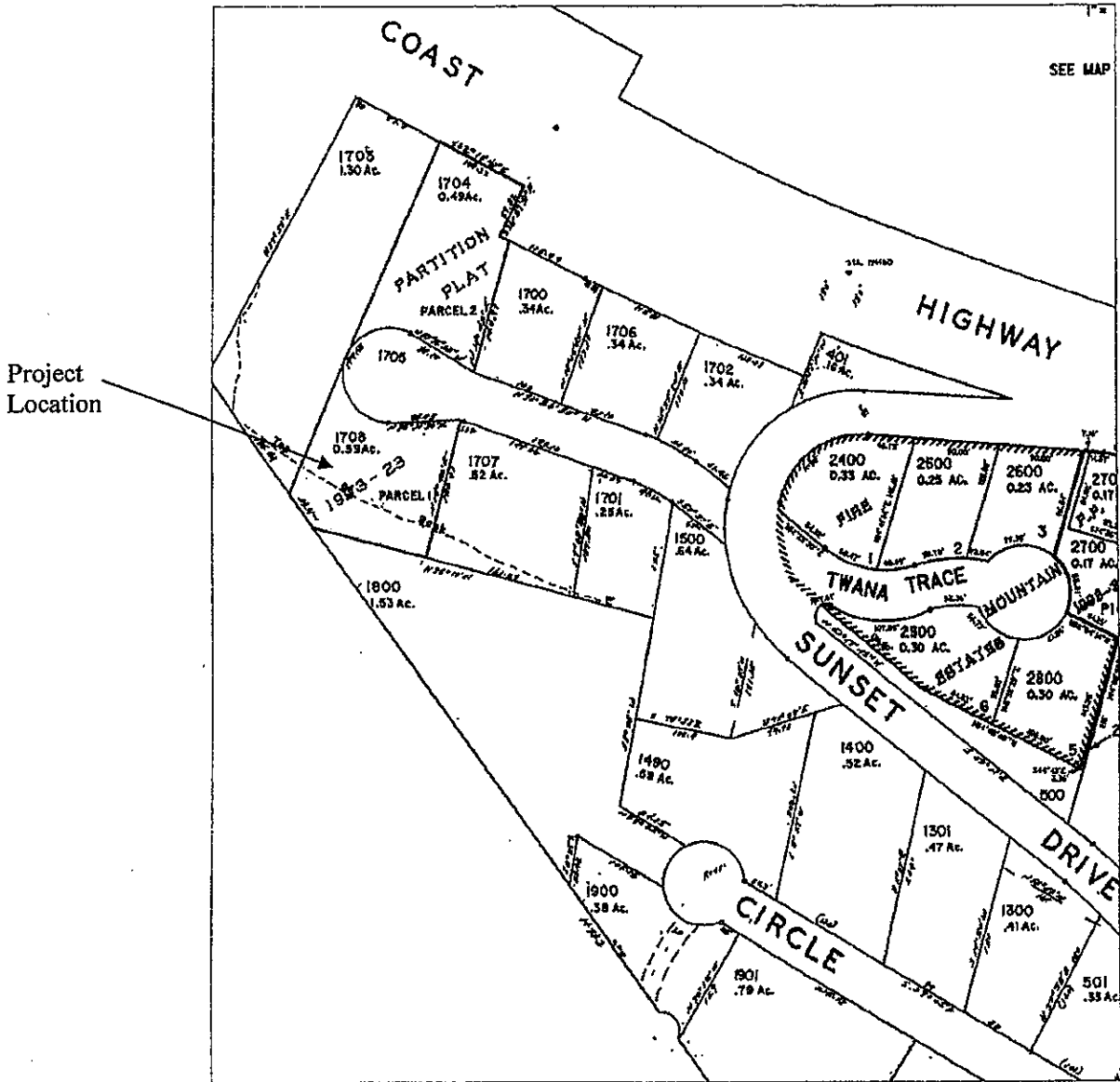
Jason R. Morgan, PE
Professional Engineer

JRM/k

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cc: Mr. Warren Krager, PSI, Inc.
Project File

enc. 1992 Geologic Hazard Report
Potential property lines and setbacks – 3 pages



**Tax Lot 01708, Map 3N 10 20BB
Parcel 1 of Partition Plat 1993-23
Neah-Kah-Nie, Tillamook County, Oregon
(Twana Trace West)**

HLB & Associates

I N C O R P O R A T E D

Surveying ♦ Civil Engineering ♦ Planning

November 1, 2005

Pitt Reeves
3112 North Lawrence
Tacoma, WA 98407

RE: Surveying and Engineering Services for Tax Lot 01708, Map 3N 10 20BB, Parcel 1 of Partition Plat 1993-23 Neah-Kah-Nie, Tillamook County, Oregon (Twana Trace West)

Dear Mr. Reeves:

Enclosed is the engineering portion of the site investigation and geologic hazard report for your property that we have recently completed for you. Please read over the recommendations carefully and also please make sure that your general contractor and your foundation excavating contractor are both aware of the requirements of this report, particularly Section F related to the foundation excavation.

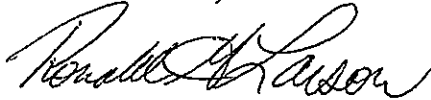
The GHR review process at the Tillamook County Planning Department typically takes 6 to 8 weeks. This process is required to be completed before applying for a building permit. We recommend that you review the County's response closely, especially their Conditions of Approval.

Should either you or your building designer need any additional surveying or engineering services related to the design and construction of your proposed home our firm would be pleased to assist you. We can provide you with a detailed topographic map of the property, a site engineering and grading plan, retaining wall design, foundation engineering and foundation excavation inspection. Our firm also can provide the required lateral analysis for shear walls within the structure should you need those services. Our staff has extensive experience with the engineering needs of homes such as yours. We would be pleased to discuss with you the additional fees for any of the above engineering services that you may need.

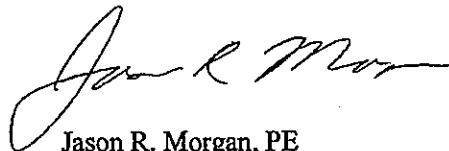
Should you have any questions regarding our investigation and this report, please contact our office.

Very truly yours,

HLB & Associates, Inc.



Ronald G. Larson, PE, PLS
Principal Engineer



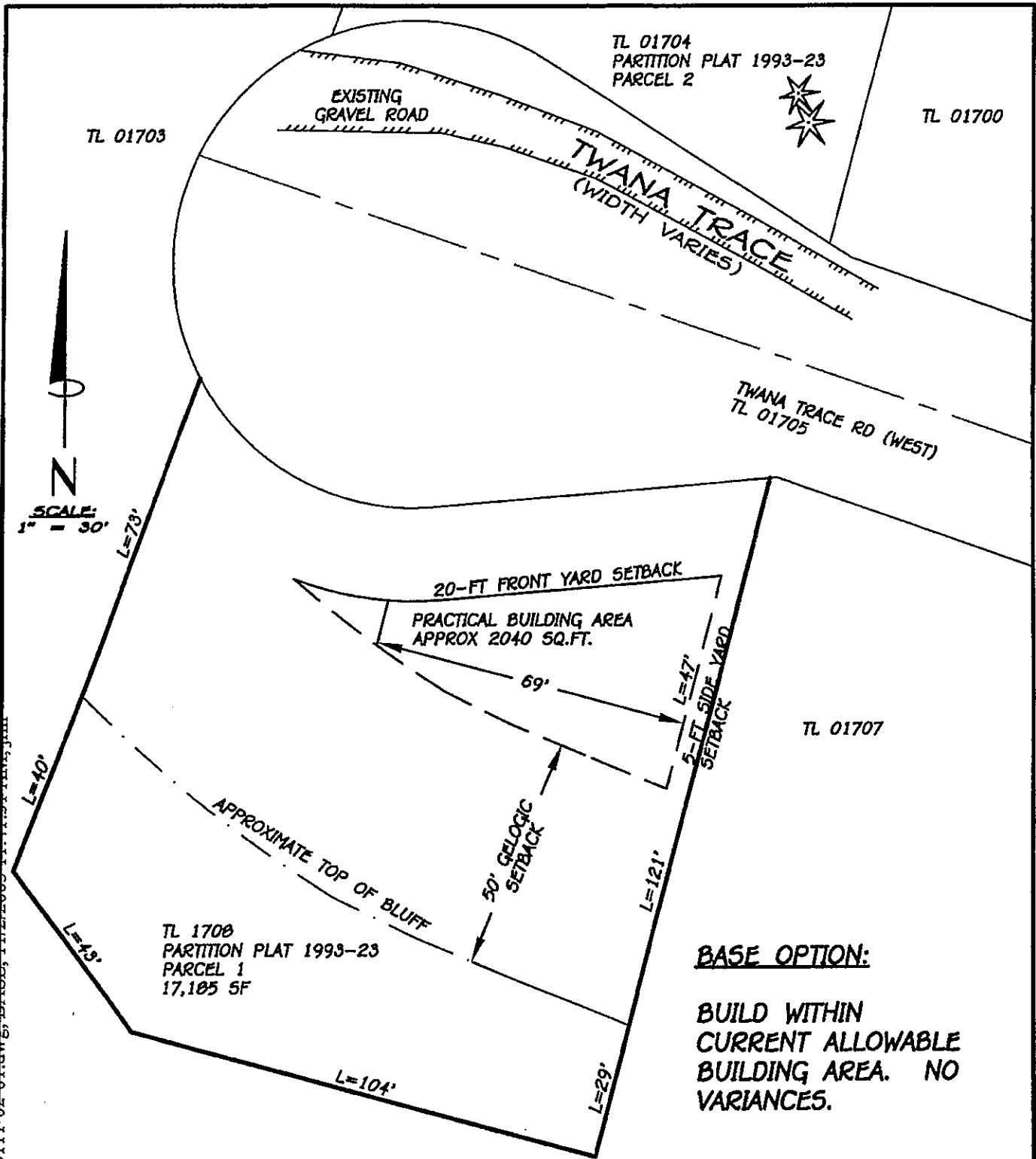
Jason R. Morgan, PE
Professional Engineer

JRM/kl

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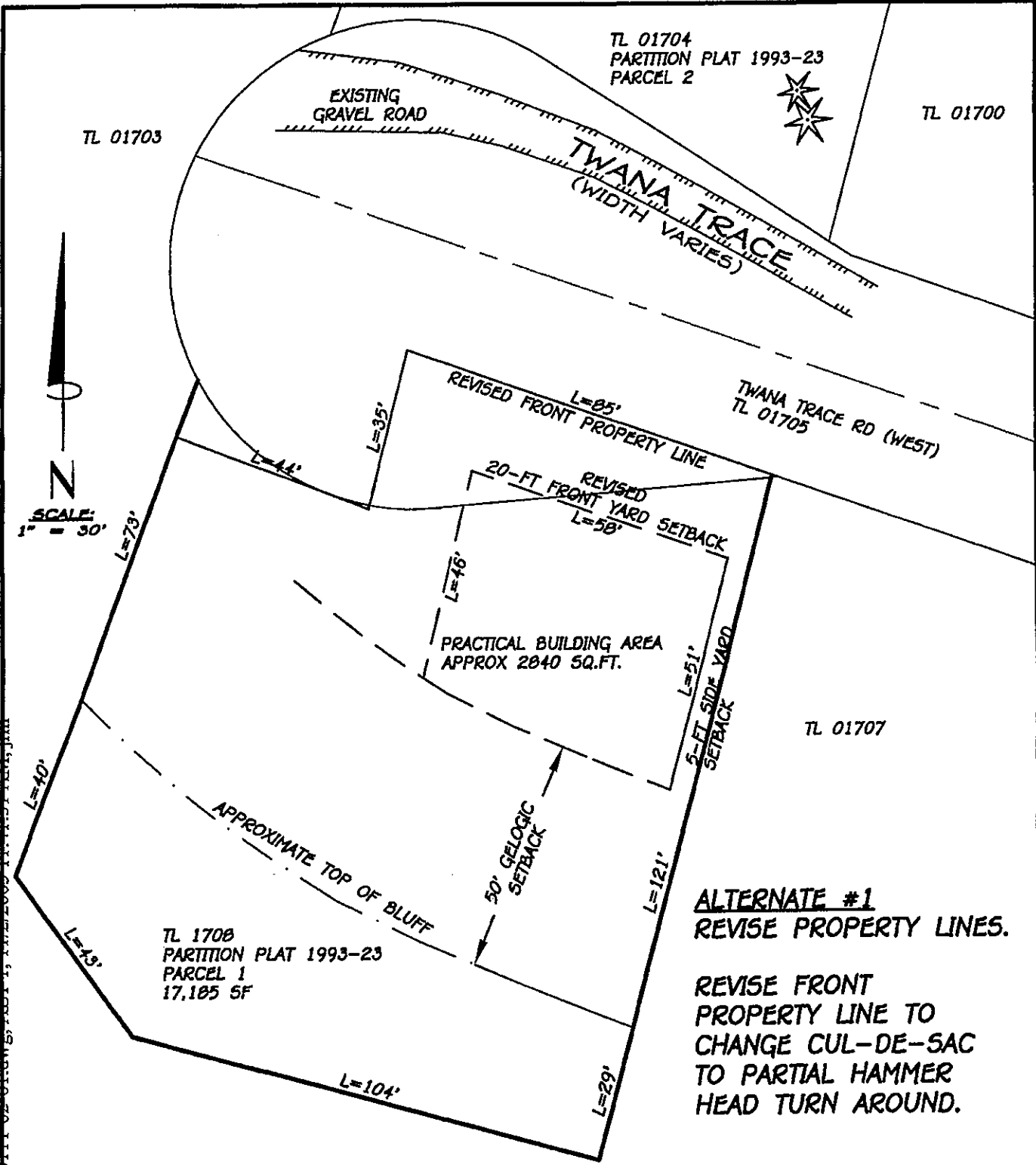
SHEET 1 OF 3

REEVES & RICE
ALTERNATE LAYOUTS
TL 01708
MAP 3N 10W 20BB
NEAH-KAH-NIE, TILLAMOOK COUNTY

HLB & Associates
INCORPORATED

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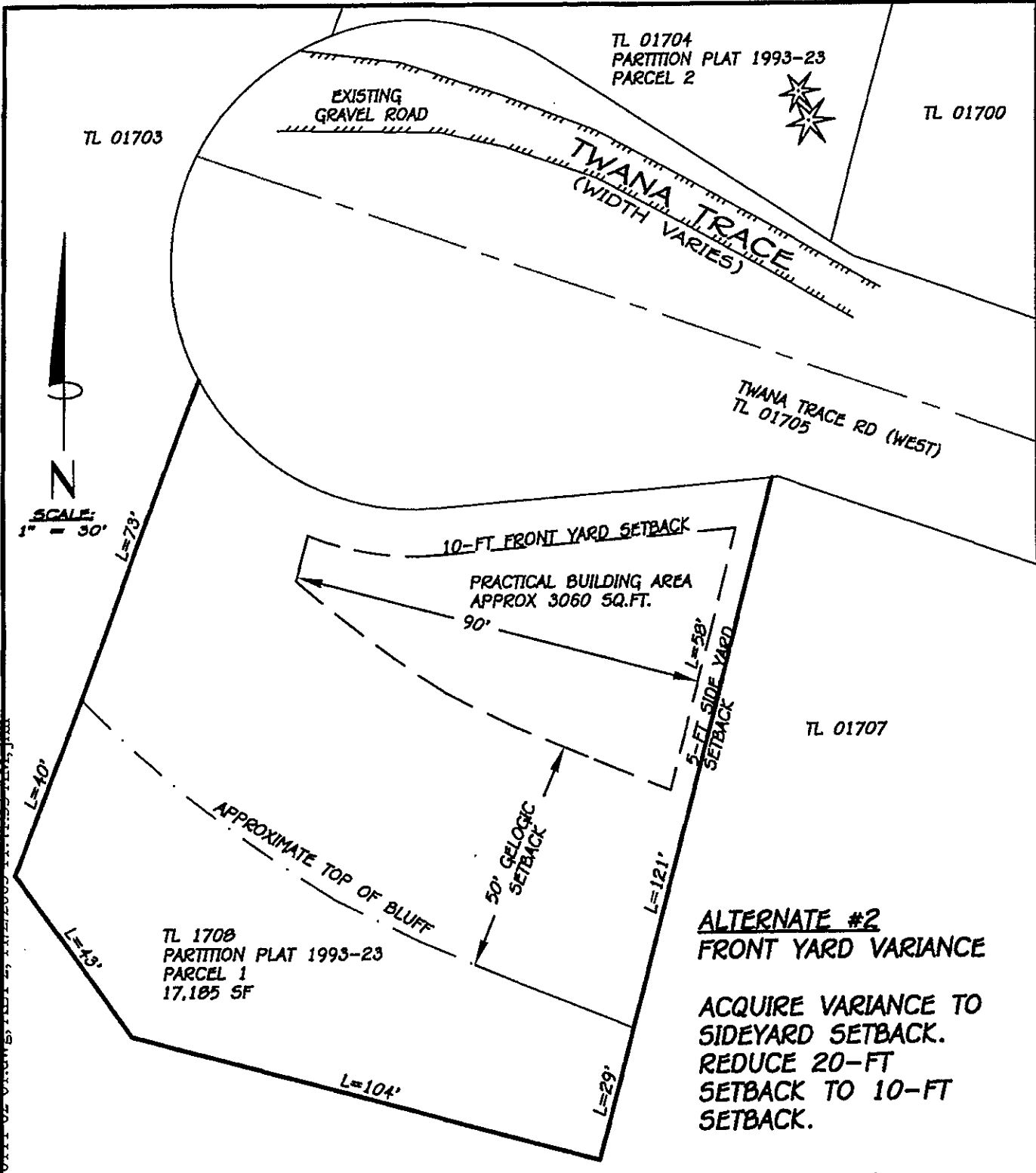
REEVES & RICE
 ALTERNATE LAYOUTS
 TL 01708
 MAP 3N 10W 20BB
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**GEOLOGIC HAZARD
REPORT
PROPOSED SINGLE FAMILY RESIDENCE
PARCEL 1 OF PARTITION PLAT 1993-23
TAX LOT 1708, MAP 3N, 10W, 20BB
TWANA TRACE, TILLAMOOK COUNTY,
OREGON**

Prepared for

**PITT REEVES
P.O. BOX 14611
PORTLAND, OREGON 97214**

Prepared by

**PROFESSIONAL SERVICE
INDUSTRIES, INC.
6032 North Cutter Circle, Suite 480
Portland, Oregon 97217
Telephone (503) 289-1778**

PSI REPORT NUMBER 704-55191-1

JUNE 15, 2005

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Digital photos of the lot recorded on the date of our site visit are included in the Reconnaissance Photo Log at the back of this report.

Proposed Building Concept

A building envelope had not been formally established at the time of our site visit. However, from our review of the 1989 geotechnical reports of this property by John MacDonald, a 50-foot slope crest setback distance was recommended out of concern for up-slope migration of the landslide head scarp over time. If a 50-foot setback distance is maintained, this leaves a relatively narrow, wedge-shaped building envelop. In discussing this previously recommended setback distance the client and his builder are considering a cantilevered upper story for part of the home to provide more floor space. We expect that a two to three story home with a partial daylight basement on the ground floor will be constructed. A conventional spread foundation system with foundation retaining walls is the likely type of foundation system planned for the home, such that the daylight basement will face out to the south. Proposed site grading may include excavation for a daylight basement and backfill of retaining walls. Site access and driveway construction may also involve retaining walls.

Elevation – Topography

Based on topographic surveys conducted in the area by HLB and Associates, Inc. we estimate that the property lies at elevations ranging from approximately elevation 440 feet above mean sea level on the north to about elevation 350 feet above sea level on the south. General topography of the area from the USGS is presented as Figure 2, at the back of this report. Slope gradients in the building envelope average about 10 to 15 percent down to the southwest, with near vertical to overhung slopes on the upper portion of the landslide head scarp. The lower slopes of the slide scarp on the far southern margin of the property are inclined at about 100 percent and locally steeper.

The near-vertical section of landslide head scarp appears to be generally stable owing to the abundant angular rock fragments in a matrix of stiff clay to silt soil. We did not observe well established drainage channels or ditches in the area. It appears that surface drainage generally infiltrates the near-surface organic topsoil and flows down slope to the southwest and may occasionally drip or flow over the head scarp without significant concentration.

No well established age of the landslide has been determined to our knowledge. However, in Paul See's 1992 report for Lot 1707, a copy of a U.S. Coast Survey Chart for 1875 shows a well established large landslide in the project area. Thus, the slide was already known as a landmark at that time, and has probably not changed significantly for the past 130 or so years. The entire slide area has been developed with houses and streets for at least the past 60 to 70 years.

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Vegetation

Most of the property is covered by dense growth of salmonberries, salal and other dense native coastal vegetation. A few larger alder and spruce trees are present near the crest of the slide scarp. Alders and more densely growing berries vines, and salal are growing on the slide mass below the scarp. The age and type of existing vegetation on the property is not a reliable indicator of slope stability. However, the mature spruce tree near the crest of the slide scarp is estimated at more than 100 years in age, and appears to be growing straight despite its location at the crest of the scarp which is locally undercut. Many larger trees, up to five feet in diameter, on the slide mass down slope of this property may be several hundred years in age. In the May 1994, and August 2000 air photos of the area it appears the same spruce tree are present as those observed during our site reconnaissance. No significant changes to the site or vegetation patterns could be discerned from the scale of the air photos reviewed.

Surface Soils

Observations of the site soils were limited to existing surface exposures. Photos at the back of this report illustrate the soils exposed in the landslide head scarp and cut slope associated with Twana Trace road construction. No subsurface exploration (i.e. test pits or borings) were performed. Soils observed indicate that near surface soils likely consist of black organic topsoil with roots to about two feet underlain by very rocky silty clay. This soil provide is generally termed slope colluvium, a genetic term used to describe soils developed on slopes by weathering, sliding by gravity, wetting-drying, and freeze-thaw cycles. Fragments of underlying basalt bedrock have become incorporated in the colluvium at this site. Abundant angular gravel cobble and boulder sized rock fragments are present in the soil and occasionally at the ground surface. This soil appears to have moderate to high internal friction, and some apparent cohesion which are measures of soil strength. Photos in the Reconnaissance Photo Log provide good examples of the colluvium soil that could be expected in foundation excavations at this site.

Geology

Geologic Background

The 1994 U.S.G.S. geologic map of the project area is presented in Figure 3. The site and project area are located on Neahkahnie Mountain, a coastal headland underlain by Grande Ronde basalt flows (Tgr), intrusive bodies (Tgri) of Columbia River Basalt Group, and sedimentary deposits of the Astoria Formation (Taa) and Alsea Formations (Tal). An ancient landslide deposit (unit Qls?) is mapped on the south facing slope of Neahkahnie Mountain. The subject property lies near the upper elevations of the landslide deposit, near the contact with the older intact basalt flows and sedimentary rocks. A large ancient landslide head scarp lies on the southern margin of the property. An inferred fault lies parallel to the northern boundary of the

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landslide. The fault does not appear to offset or disturb Quaternary or younger geologic deposits and on that basis would be classified as inactive. The fault trace is mapped crossing the upper slopes of the property in a generally east-west direction. The U.S.G.S. topographic map or air photos reviewed for this work do not indicate a lineament or other topographic expression of the fault trace.

Local Geology

As noted above, we observed surficial black organic topsoil over angular rocky colluvium. This colluvium is considered a surficial geologic deposit developed on slopes underlain by bedrock of basaltic lava flows or marine sedimentary rock. We did not observe in-place bedrock on the site, and are not aware of the inclination of the orientation and inclination of the sedimentary bedding. Other than the obvious landslide head scarp which crosses the southern margin of the property, we did not observe other surface expressions of faults, drainage gullies, or other expressions of underlying bedrock geology. We conclude that colluvium covers bedrock, and any faults on this site. Depth to bedrock was not determined during our study of this property, however, based on the nature of the colluvial soils exposed at this site, and the proximity of intact basalt bedrock up slope on the side of Neah-kah-Nie Mountain and as indicated by the geologic maps, we expect basaltic bedrock at depths of a few tens of feet or less.

Geologic Hazards

Our interpretation of geologic hazards that may affect the property and proposed home construction are summarized in the following paragraphs.

Potential Instability of Landslide Head Scarp

During our site visit we observed the crest of the landslide head scarp for signs of active erosion, sloughing, toppling or other forms of incremental or massive slope failure. We noted that the topsoil and rooted zone overhangs the crest of the near vertical landslide head scarp. This overhanging soil section is a result of root mass cohesion and reinforcement of the near-surface soil. The larger tree roots appear to be a factor in the degree of integrity of the organic soil section as areas near the larger trees were further overhung. The underlying non-organic colluvium is near-vertical and exhibits vertical joints likely formed by stress relief and shrinkage formed by wetting and drying. It is our opinion that the crest of the landslide scarp is marginally stable but likely fails infrequently by incremental sloughing and toppling of the overhung and near-vertical slope sections. The rate of up-slope retreat of the crest of the scarp due to collapse of the near surface soils is difficult to determine without long-term site specific monitoring. The engineering reconnaissance work conducted in 1989 by MacDonald Engineering and HLB and Associates recommended a 50-foot safety margin building setback distance from the crest of the scarp. During our recent site we measured a distance of approximately 84 feet from the Twana Trace right-of-way stake on the northern property line to

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the crest of the scarp. This distance appears to be about the same distance scaled from the 1989 site plan in a report prepared by MacDonald Engineering, included as Figure 4 at the back of this report. From these comparative measurements it does not appear that the landslide scarp crest has eroded up-slope during the past 17 years. On that basis, it is our opinion that the previously recommended building setback distance of 50 feet is still appropriate for development on this site. From our work in the general project area, we have not observed obvious signs of massive slope instability or evidence of recent landslide movement. Local streets and residential foundations were not observed to have cracks, misalignment or other off-sets attributable to slope movement. However, because the property is mapped in an ancient landslide area, the owner must assume responsibility for risk of slope movement due to slide reactivation, creep, or ongoing settlement of the slide mass. Sufficient subsurface information does not exist to adequately quantify the risk of ancient slide reactivation or creep. However, in our opinion this lot does not appear to be at any greater risk than other nearby developed properties. Note that numerous homes and streets have been developed on the slide mass itself downslope of the head scarp.

It is our opinion that limited local grading or foundation excavation on the lot is unlikely to have a significant effect on the overall mass balance and stability of the ancient landslide scarp, due to the relatively small volume of grading proposed for the foundation and basement excavation. It is our opinion that minor grading conducted in association with home site development is not likely to result in decreased slope stability. We would recommend, however, that the 50 foot slope setback zone also be maintained for site grading. Limited installation of site drainage features and minor landscaping without use of fills or retaining walls and limited minor tree limbing or clearing could be allowed within 50 feet of the crest of the scarp. If tree removal is proposed it should be recognized that tree roots provide strength and stability to the near surface soils on the site which protect the underlying colluvium from erosion. Removal of the the larger trees would likely improve local stability of steeper slopes, initially, as dead weight and wind shear forces that would be applied to the soil are relieved. However, eventual loss of soil strength may occur over a period of several decades as cohesion and reinforcement of soil mass is lost from death and decomposition of the tree roots that provide some apparent cohesion and reinforcement to the upper soils.

Boulders in Excavations

Based on our observations of scattered boulders exposed in slopes and at the ground surface in the area, we point out the possibility of difficult excavation conditions in the rocky to boulder colluvium. It should be anticipated that a large track-mounted excavator with a toothed bucket will likely be required for foundation excavation. It is also likely that overexcavation of boulders and backfill to planned foundation subgrade with engineered fill may be required for foundations. Boulders dislodged from steeper slope sections may roll down slope and launch with force from the steep slope below the property. Care should be taken to contain all

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excavated soils and rock fragment such that downslope injury or property damage from soil or rock fall does not result.

Foundation Support Considerations

Because of the variable nature of slope colluvium and landslide deposits, the possibility exists that unconsolidated soils, buried horizons of softer soils or organic materials, or poorly drained soils may be present that could impact foundation and retaining wall support. It would be prudent to retain a locally experienced geotechnical engineer, or engineering geologist during construction to evaluate foundation bearing soils for suitability of foundation support, and document implementation of engineering design recommendations during construction. A qualified professional engineer should also be consulted to provide appropriate lateral earth pressure for retaining wall design and provide subsurface drainage recommendations for embedded walls, floor slabs, and footings. Subject to final site layout, home design details, and other factors, you may consider providing additional foundation reinforcement and embedment depth for long term soil support, if the scarp were to migrate upslope toward the home over the design life of the home.

Site Drainage Considerations

We recommend minimizing impact to the site from increased runoff and disturbance of soils. Site drainage from impermeable surfaces should not be allowed to discharge directly to the colluvium soil or with high velocity directly over the scarp. We suggest that storm water be released through a perforated drainage pipe embedded about 6 to 12 inches in the native topsoil such that drainage is discharged in as diffuse a manner as possible. The pipe should be located as far as possible from the scarp while still maintaining adequate gravity flow away from the home, walkways, and driveway. A 1 to 2 percent slope should be used to ensure positive drainage. This method will take advantage of the natural ability of the thick organic topsoil to store runoff water and slowly release it over time, which results in natural slope and erosion protection. We recommend that site drainage design to be prepared by HLB and Associates be implemented and maintained as recommended.

Regional Seismicity

Oregon's position at the western margin of the North American Plate and its position relative to the Pacific and Juan de Fuca plates has had a major impact on the geologic development of the state. The interaction of the three plates has created a complex set of stress regimes that influence the tectonic activity of the state. The western part of Oregon is heavily impacted by the influence of the active Cascadia Subduction Zone (CSZ) formed by the Juan de Fuca Oceanic Plate converging upon and subducting beneath the North American Continental Plate off the Oregon coastline.

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The CSZ, located approximately 100 kilometers off of the Oregon and Washington coasts, is a potential source of earthquakes large enough to cause significant ground shaking at the subject site. Research over the last several years has shown that this offshore fault zone has repeatedly produced large earthquakes every 300 to 700 years. It is generally understood that the last great CSZ earthquake occurred about 300 years ago, in 1700 AD.

Although researchers do not agree on the likely magnitude, it is widely believed that earthquakes moment magnitude (M_w) 8.5 to 9.5 are possible. The duration of strong ground shaking is estimated to be about 1 minute, with minor shaking lasting on the order of several minutes.

Additionally, earthquakes resulting from movement in upper plate local faults is considered a possibility. Crustal earthquakes are relatively shallow, occurring within 10 to 20 kilometers of the surface. Oregon has experienced at least two significant crustal earthquakes in the past decade—the Scotts Mills (Mt. Angel) earthquake (M_w 5.6) on March 25, 1993 and the Klamath Falls earthquake (M_w 5.9) on September 20, 1993. Based on limited data available in Oregon, it would be reasonable to assume a M_w 6.0 to 6.5 crustal earthquake may occur in Oregon every 500 years (recurrence rate of 10% in 50 years). Several faults are mapped in the vicinity of Neahkahnie Mountain, although these are anticipated to be older, inactive faults. Although we are not aware of any seismogenic crustal faults in the immediate vicinity of the project site that might pose a surface rupture hazard, there are faults within 50 kilometers, such as the Tillamook Fault Zone, that should be considered as potentially seismogenic and capable of generating significant ground motion.

Relative Seismic Hazards

Relative hazards associated with seismic activity may include strong ground motion and seismically induced landsliding. The stability of the ancient landslide at this site would likely be compromised during a Cascadia Subduction Zone earthquake. Loss of support at the toe of the slide could induce renewed movement in the upper reaches of the slide mass. Severe seismic ground shaking could also destabilize the over-steepened landslide head scarp which could possibly threaten the proposed home site even if a 50 foot setback distance is maintained.

The subject property is well above anticipated tsunami run-up elevations, and not likely to be effected by tsunami flooding. However, severe erosion and scour below the site caused by a tsunami could lead to landslide reactivation at lower elevations, with the possibility of affecting the upper portions of the slide over time. It should be pointed out that risk of relative seismic hazards at this site is no greater than many previously developed sites in the general area.

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In our opinion seismic design in accordance with the International Residential Code Site Class D2, and International Building Code criteria as applicable, is considered adequate for proposed development on this site.

Summary Findings

Based on our reconnaissance and literature research it is our opinion that the subject lot is suitable for single family residential construction as proposed, subject to recommendations provided herein, and subsequent recommendations to be provided by design engineers as required for the specific construction. Construction of the proposed home, as we understand its conceptual design, is not expected to result in adverse effects on adjacent areas, provided it is designed and constructed in accordance with the International Building Code, and other pertinent local codes.

It is our opinion that a no-build and no grading setback zone of 50 feet from the crest of the landslide head scarp should be maintained. This will likely limit the effective width of the western margin of the building foot print as illustrated and discussed in the 1989 MacDonald Engineering report on this property. We recommend that the home be located up slope and as far east as permissible to the right-of-way of Twana Trace and the adjacent east property line in the relatively mildly sloped portion of the property. It may also be possible to cantilever the upper floor of the home in a way that will provide additional square footage as discussed with you on the day of the site visit. It is our opinion that the site does not pose a significantly higher risk for development than many previously developed properties in this area. We wish reiterate, however, that the general site area has been mapped by DOGAMI, the U.S.G.S., and other consulting professional geologists as an ancient landslide. Property owners are responsible for accepting risks associated with ancient landslide reactivation, however remote the risk may be. Final design has not been completed at this time. We anticipate that the project architect and engineering design team will address specific design and construction concerns under separate cover.

Limitations

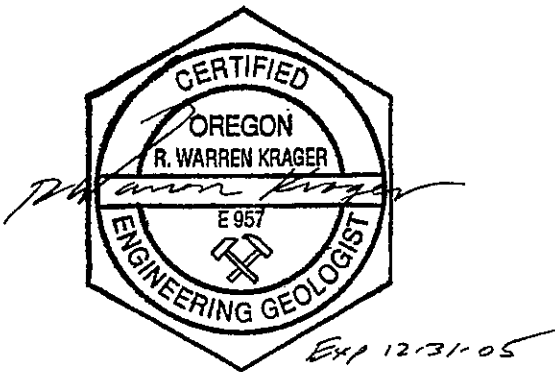
Services performed by the Engineering Geologist and Geotechnical Engineer for this project have been conducted with that level of care and skill ordinarily exercised by members of the profession currently practicing in this area under similar budget and time restraints. No warranty, expressed or implied, is made.

Finally, because of the dynamic nature of the coastal environment, as well as the influence of relatively unpredictable events, such as El Nino and subduction zone earthquakes, long-term prediction of erosion and deposition patterns, and slope stability can be difficult. Also, the relatively short development span of the area makes trends difficult to assess historically.

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Page 10

We will be available for further consultation and observations during the remaining design and construction phases of this project. If you have any questions regarding our recommendations, please call Warren Krager at (503) 978-4727.

Sincerely,
Professional Service Industries, Inc.



R. Warren Krager, R.G., C.E.G.
Senior Engineering Geologist



Charles R. Lane, P.E.
Senior Geotechnical Engineer

- Attachments: Figure 1 – Site Location Plan
Figure 2 – Local Topography
Figure 3 – Local Geologic Map
Figure 4 – Landslide Scarp Setback Schematic
Site Reconnaissance Photographs

W.M.

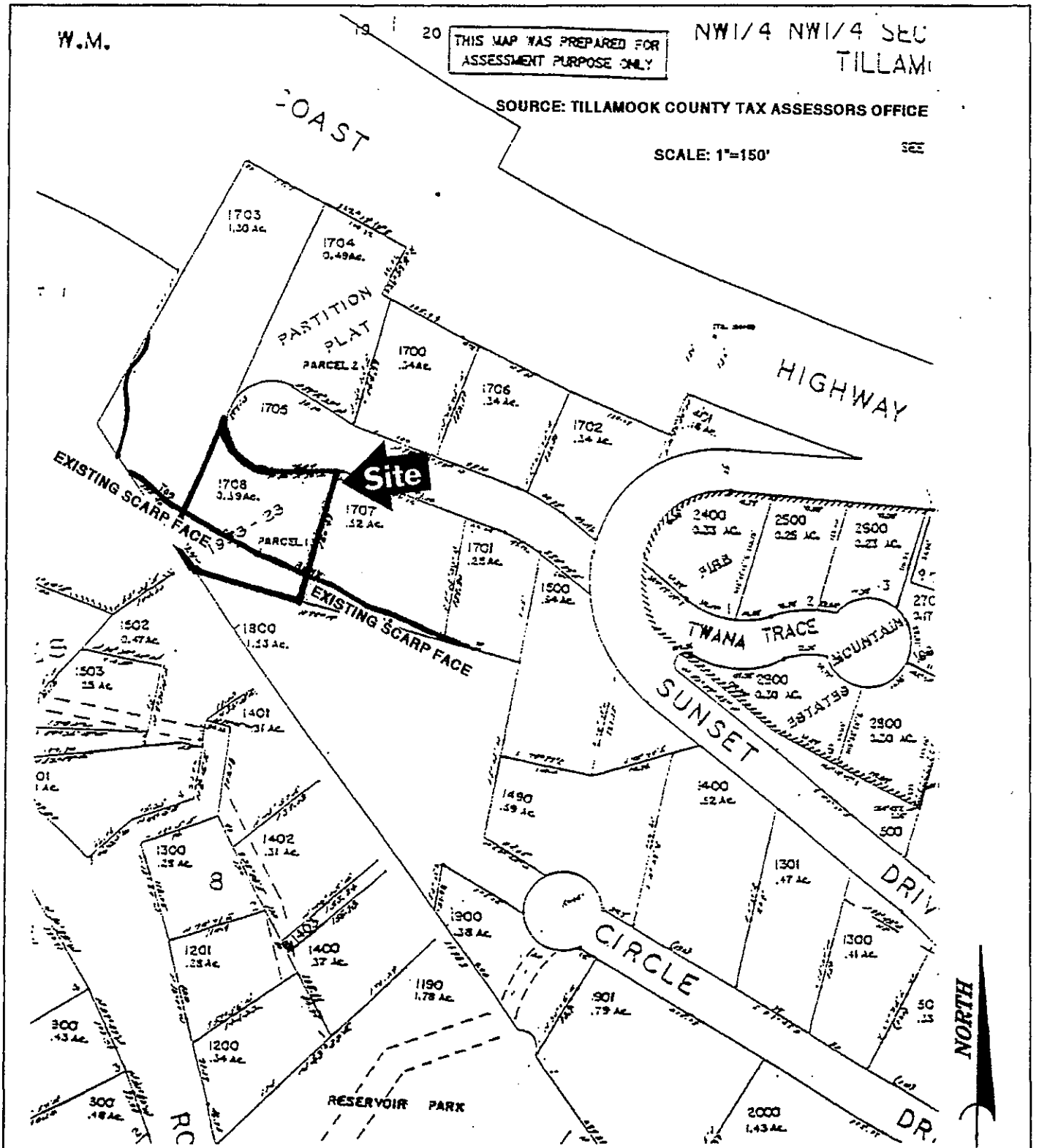
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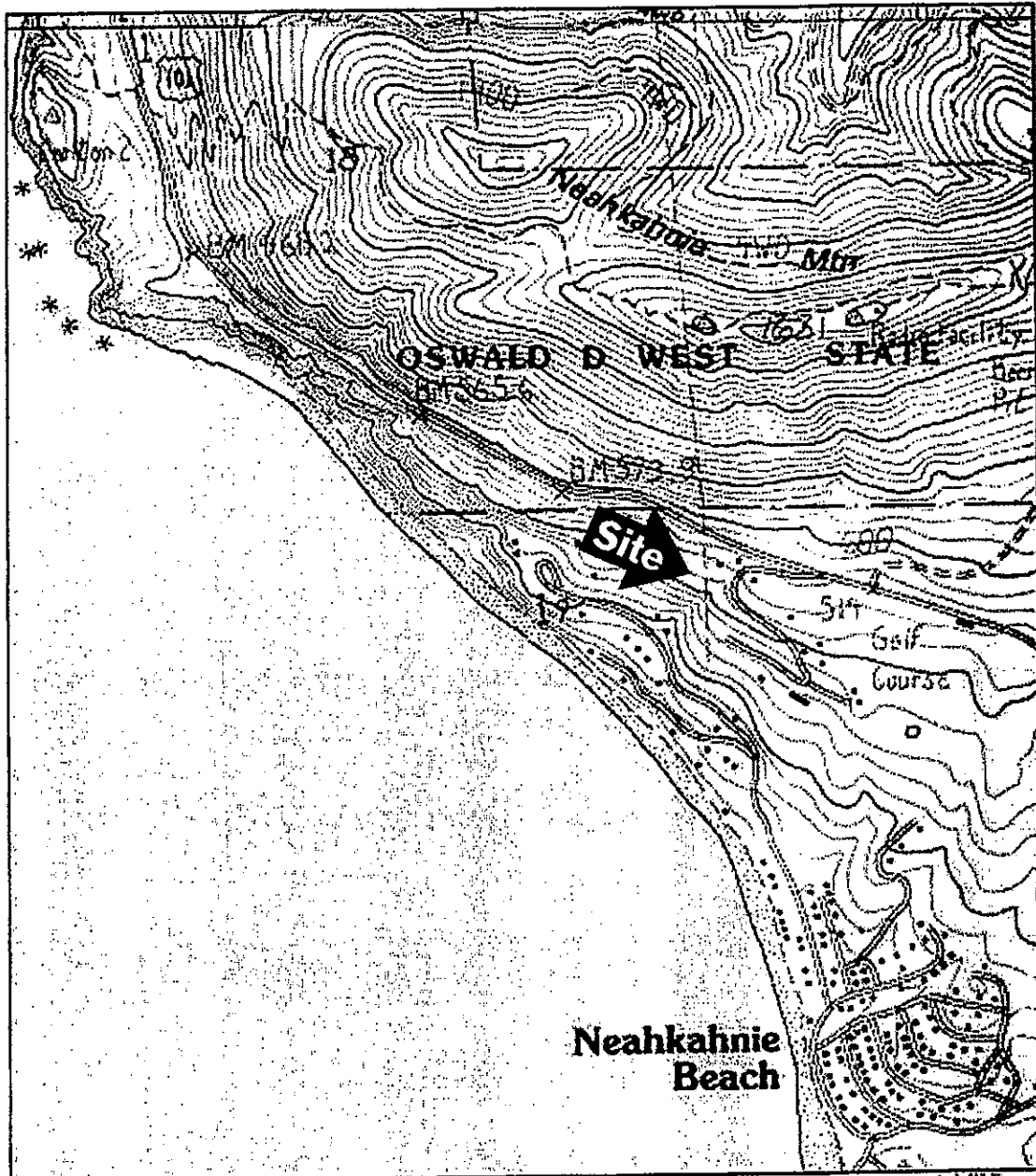
SOURCE: TILLAMOOK COUNTY TAX ASSESSORS OFFICE

SCALE: 1"=150'

SEE



 <p>Information To Build On Engineering • Consulting • Testing</p>	<p>DRAWING TITLE: SITE LOCATION PLAN</p>	<p>DATE: 06/15/2005</p>	<p>FIGURE NUMBER: 1</p>
<p>PSI, Inc. 6032 N. Cutter Circle, Suite 480 Portland, Oregon 97217 (503) 289-1778</p>	<p>PROJECT: GEOLOGIC HAZARD REPORT PROPOSED SINGLE FAMILY RESIDENCE TAX LOT 01708, MAP 3N 10 20BB TWANA TRACE, TILLAMOOK COUNTY, OREGON</p>	<p>DRAWN BY: MAD</p>	<p>PSI REPORT NUMBER: 704-55191-1</p>



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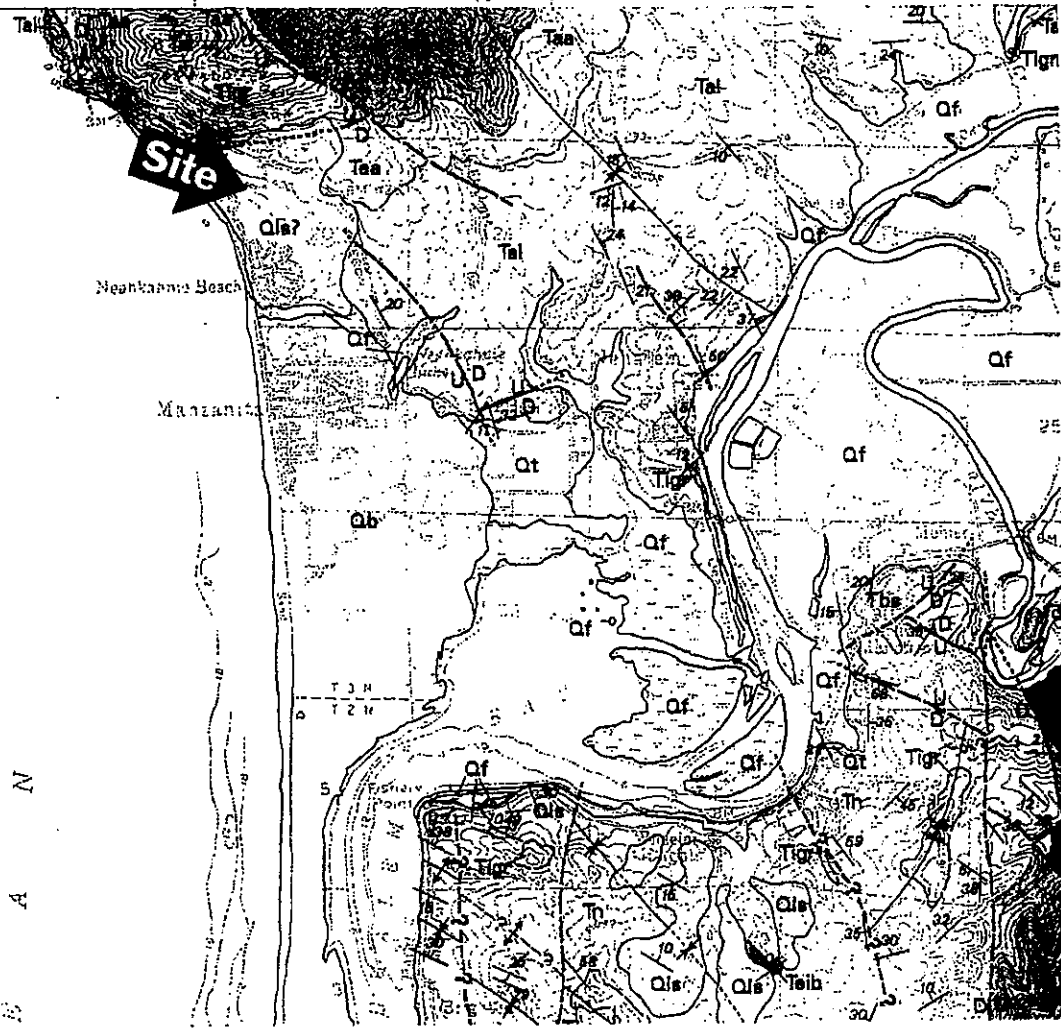
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<p>PSI, Inc. 6032 N. Cutter Circle, Suite 480 Portland, Oregon 97217 (503) 289-1778</p>	<p>PROJECT: GEOLOGIC HAZARD REPORT PROPOSED SINGLE FAMILY RESIDENCE TAX LOT 01708, MAP 3N 10 20BB TWANA TRACE, TILLAMOOK COUNTY, OREGON</p>	<p>DRAWN BY: MAD</p>	<p>PSI REPORT NUMBER: 704-55191-1</p>

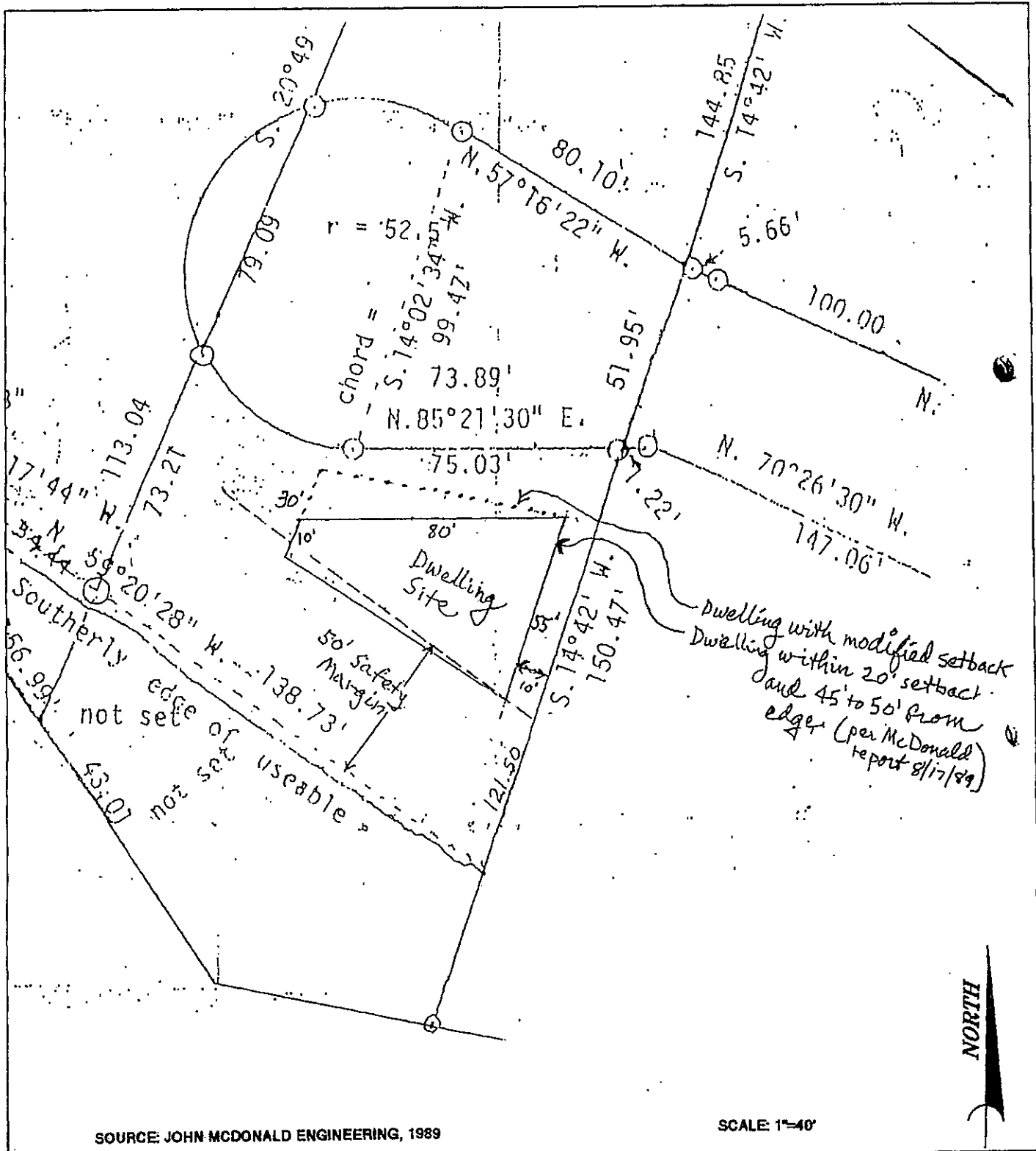
**DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY**



SCALE: 1"=1 MILE

SOURCE: GEOLOGIC MAP OF THE TILLAMOOK HIGHLANDS, NORTHWEST OREGON COAST RANGE, USGS OR-94-21, 1994

	<p>DRAWING TITLE: LOCAL GEOLOGY</p>	<p>DATE: 06/15/2005</p>	<p>FIGURE NUMBER: 3</p>
<p>PSI, Inc. 6032 N. Cutter Circle, Suite 480 Portland, Oregon 97217 (503) 289-1778</p>	<p>PROJECT: GEOLOGIC HAZARD REPORT PROPOSED SINGLE FAMILY RESIDENCE TAX LOT 01708, MAP 3N 10 20BB TWANA TRACE, TILLAMOOK COUNTY, OREGON</p>	<p>DRAWN BY: MAD</p>	<p>PSI REPORT NUMBER: 704-55191-1</p>



SOURCE JOHN MCDONALD ENGINEERING, 1989

SCALE: 1"=40'

NORTH

PSI Information
To Build On
Engineering • Consulting • Testing

DRAWING TITLE:
SCARP FACE SETBACK SCHEMATIC

DATE: 06/15/2005

FIGURE NUMBER: 4

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PROJECT:
GEOLOGIC HAZARD REPORT
PROPOSED SINGLE FAMILY RESIDENCE
TAX LOT 01708, MAP 3N 10 20BB
TWANA TRACE, TILLAMOOK COUNTY, OREGON

DRAWN BY: MAD

PSI REPORT NUMBER:
704-55181-1

Reeves Geologic Hazard Reconnaissance
PSI Report No.: 704-55191-1
June 15, 2005

Geologic Hazard Reconnaissance Photo Log, Digital photos recorded June 2, 2005



Photo 1 – Unimproved cul de sac at the end of Twana Trace lies in foreground. Low growing brush lies on the northern margin of Tax Lot 1708. The mature spruce tree near the center of the photo lies at the crest of an ancient landslide head scarp near the southern margin of the property.



Photo 2 - View to northwest from top of ancient landslide headscarp, with root mass of spruce tree exposed. Vertical joints in colluvium are likely caused by stress relief and wetting and drying cycles.

Reeves Geologic Hazard Reconnaissance
PSI Report No.: 704-55191-1
June 15, 2005

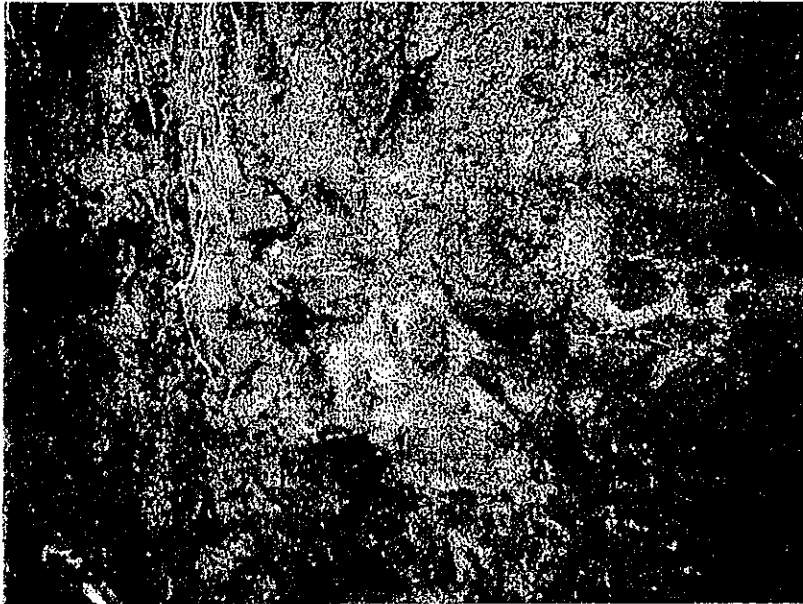


Photo 3 – Detail of dense angular gravel colluvium in vertical face of landslide headscarp. Silty clay soil matrix provides weak cementation of colluvium.



Photo 4 – Detail view of rocky colluvium soil exposed in cut slope near end of Twana Trace on upslope side of property.

Reeves Geologic Hazard Reconnaissance
PSI Report No.: 704-55191-1
June 15, 2005



Photo 5 – Cross-slope view along cleared corridor parallel to front of home site showing relatively mild topography in building site. Building site is limited by recommended 50 foot setback from ancient landslide headscarp.

Geotech 1989

JOHN McDONALD ENGINEERING

SOILS - CIVIL - GEOTECHNICAL
Ground-Penetrating RADAR
10116 S.E. STANLEY AVENUE
PORTLAND, OREGON 97222

(503) 774-0077

August 17, 1989

Linda Willard
Tillamook County Planning Department
201 Laurel Avenue
Tillamook, Oregon 97141

GEOTECHNICAL INVESTIGATION OF SOUTH PART OF TAX LOT 1704, MAP 3N
10 20BB, NEAHKANIE, TILLAMOOK COUNTY

Tax Lot 1704 is located on the ocean side of Highway 101 immediately south of the south boundary of Oswald West State Park. A street called Twana Trace dead ends at the lot, dividing the lot into a north part and a south part. The maps accompanying DOGAMI Bulletin 74, Environmental Geology of the Coastal Region of Tillamook and Clatsop Counties, Oregon, show an active landslide on the downhill side of the south part of the lot.

Section 4.070 Hazard Analysis

4.070 (6) (a) (1) Soils and Bedrock Types

Soils are thin and rocks litter the ground surface. In road cuts the rocks were touching one another and the cuts were standing vertically. The rocks examined were basalt with weathered surfaces and were black inside when broken. No bedrock was visible to hundreds of feet below the lot.

4.070 (6) (a) (2) Slope

Slope varied from 30 percent at the north edge of the south part to 25 percent at the low edge of the lot, with a vertical cliff 50 or more feet high thereafter.

4.070 (6) (a) (3 and 4) Bedding Planes and Soil Depth

No bedding planes were discernible and no bedrock was present. Soil depth was zero to several inches.

4.070 (6) (a) (5 and 6) Other Relevant data and water drainage patterns

No test holes could be made in the rocks. No surface flow of water or evidence of groundwater flow was observed.

4.070 (6) (a) (7) Visible Landslide Activity

None was seen. If the cliff is in fact the edge of an active landslide the activity would be below the cliff. There was no indication the cliff was eroding into the lot. Numerous spruce trees five feet in diameter are growing vertically out of the ground to indicate perhaps 500 years of soil stability.

4.070 (7) (a and b) Development density and locations.

In my opinion a portion of the south part of Tax Lot 1704 is suitable for residential use. Based on the vertical earth cuts, that are stable, the friction angle of the rocky material is at or close to 45 degrees. Any initial failure would slope back at 2.4 vertical to 1 horizontal. Presumably, in time, secondary failures would bring the cliff back closer to a 1 vertical to 1 horizontal slope, in the absence of any corrective measures or vegetation takeover. My conservative estimate of the long term maximum loss of land on the lot is 40 feet or so from the present cliff edge.

It is recommended that any buildings be planned to be at least 50 feet from the present cliff edge, except that corners or architectural details can extend to 45 feet from the present cliff edge. In order to provide enough space to accommodate a house I recommend that a setback variance be sought, or that the culdesac boundaries be adjusted.

4.070 (7) (c and d) Land Grading and Vegetation

Vertical cuts stand indefinitely without slumping or erosion. Fills that are made of local materials should have slopes at 50 percent or 1 vertical to 2 horizontal.

Vegetation is not needed to stabilize the rocky material against erosion. Nevertheless, for the vertical cliff area, I recommend planting ivy and supplying fertilizer and irrigation in accordance with the recommendations of a nursery or landscape architect.

4.070 (7) (e and f) Foundation design and road design

Ordinary foundation design in accordance with the building code may be used. I have no problem with changing the loop turn-around to an "L"-shaped turn-around. The rocky soil presents no problems with road cuts and fills.

4.070 (7) (g) Stormwater management.

~~The ground now absorbs all rainwater. Roof water is~~ recommended to be put into a seepage trench of minimum 2' width, 3' depth, and 25' length, filled with soil-free broken rock and fitted with a full length perforated distribution pipe. The seepage trench should be kept as far from the cliff edge as possible, which probably would mean it would be placed to the west side of any house.

4.070 (8) (a) Type of use and adverse effects

The proposed use is residential and in my opinion it will have no adverse effects on adjacent areas.

4.070 (8) (b) Hazards

My opinion is that there are no hazards with respect to material coming down from higher up on the mountain or from

landslide or movement within this part of the lot. The hazard would be in the possible eating back of the edge of the vertical cliff. This cannot be forecast.

4.070 (8) (c and d). Protection of surrounding area and stabilization of vegetation.

The development will produce no adverse effects on the adjacent areas so no protection is needed. Vegetation appears not to be needed on the rocky soil but, as mentioned, ivy planting and encouragement at the cliff edge is recommended.

4.070 (8) (e)

In my opinion the proposed development is adequately protected from any geological hazards, wind erosion, undercutting, ocean flooding, and storm waves.

4.070 (8) (f)

In my opinion the proposed development is designed to minimize adverse environmental effects.

Very truly yours,



Photo Identification and notes

14. Twana Trace Rd.

1. This is the upper portion of the road that leads to the last house, the neighbor to the north of the property. To the left, is the undeveloped portion of the "cul de sac with the central green area is seen where the tree stands, and the portion which will be the property access, in front of this (grassy area)

15.

a. Undeveloped cul de sac looking south from northern edge of property, On left is vegetation/ trees of the central green area, front yard property line is on the right.

b. Undeveloped cul de sac looking north from southern edge of property, On right is vegetation/ trees of the central green area, front yard property line on the left.

c. Same direction as b showing undeveloped cul de sac with central vegetation on right, approximately mid property on left

d. Same direction as b showing undeveloped cul de sac with central vegetation on right, further towards northern neighbor

e. Photo from 2005 Geotech report showing undeveloped cul de sac looking west towards ocean. Shows this has been undeveloped for greater than the 18 years since that report, was not developed prior to 2005 either.

Central vegetated area:

f. Central vegetated area of cul de sac looking from front yard of property

g. Large Sitka spruce in central cul de sac.

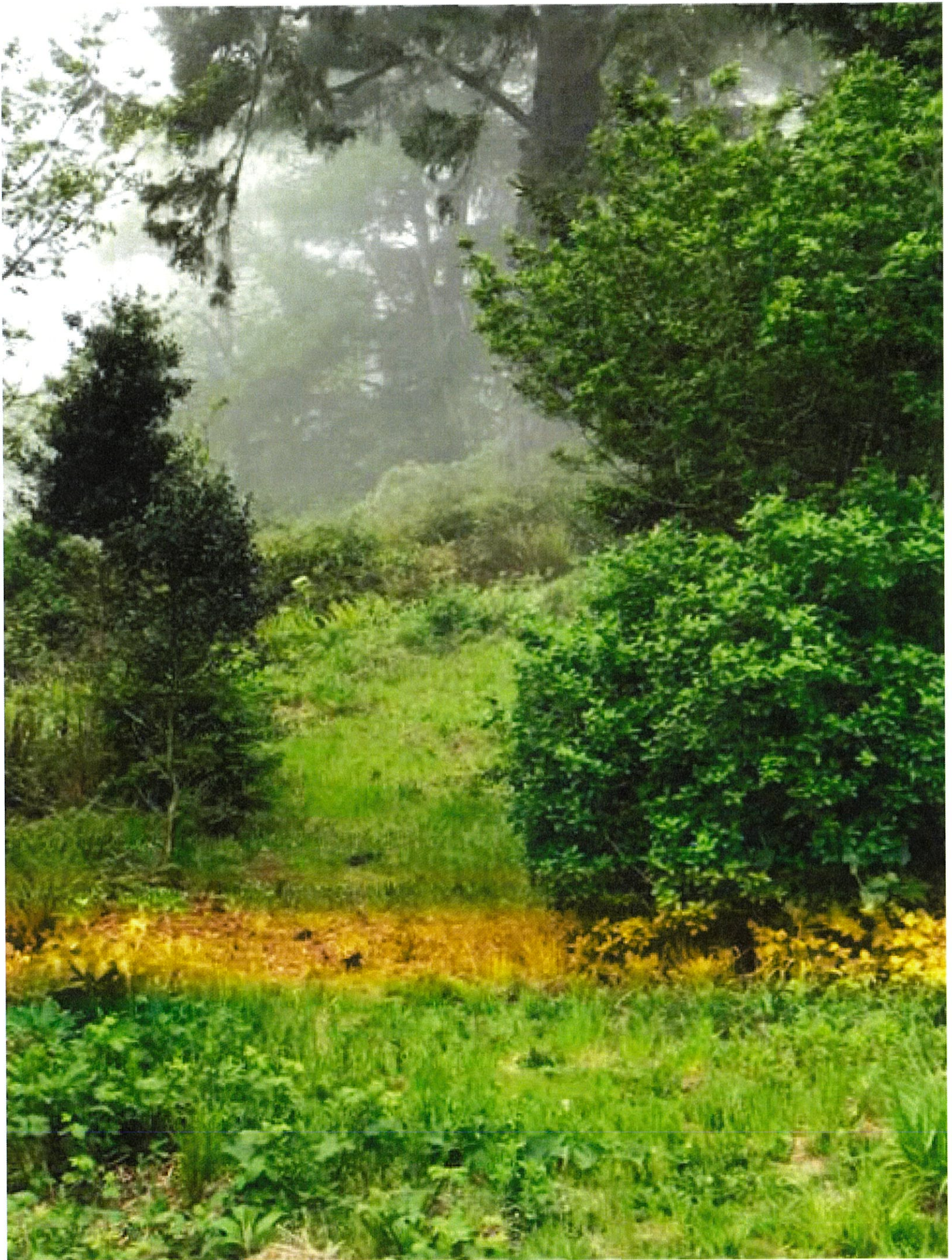
h. Edge of Headscarp/Bluff looking west











Reeves Geologic Hazard Reconnaissance
PSI Report No.: 704-55191-1
June 15, 2005

Geologic Hazard Reconnaissance Photo Log, Digital photos recorded June 2, 2005



Photo 1 – Unimproved cul de sac at the end of Twana Trace lies in foreground. Low growing brush lies on the northern margin of Tax Lot 1708. The mature spruce tree near the center of the photo lies at the crest of an ancient landslide head scarp near the southern margin of the property.



Photo 2 - View to northwest from top of ancient landslide headscarp, with root mass of spruce tree exposed. Vertical joints in colluvium are likely caused by stress relief and wetting and drying cycles.



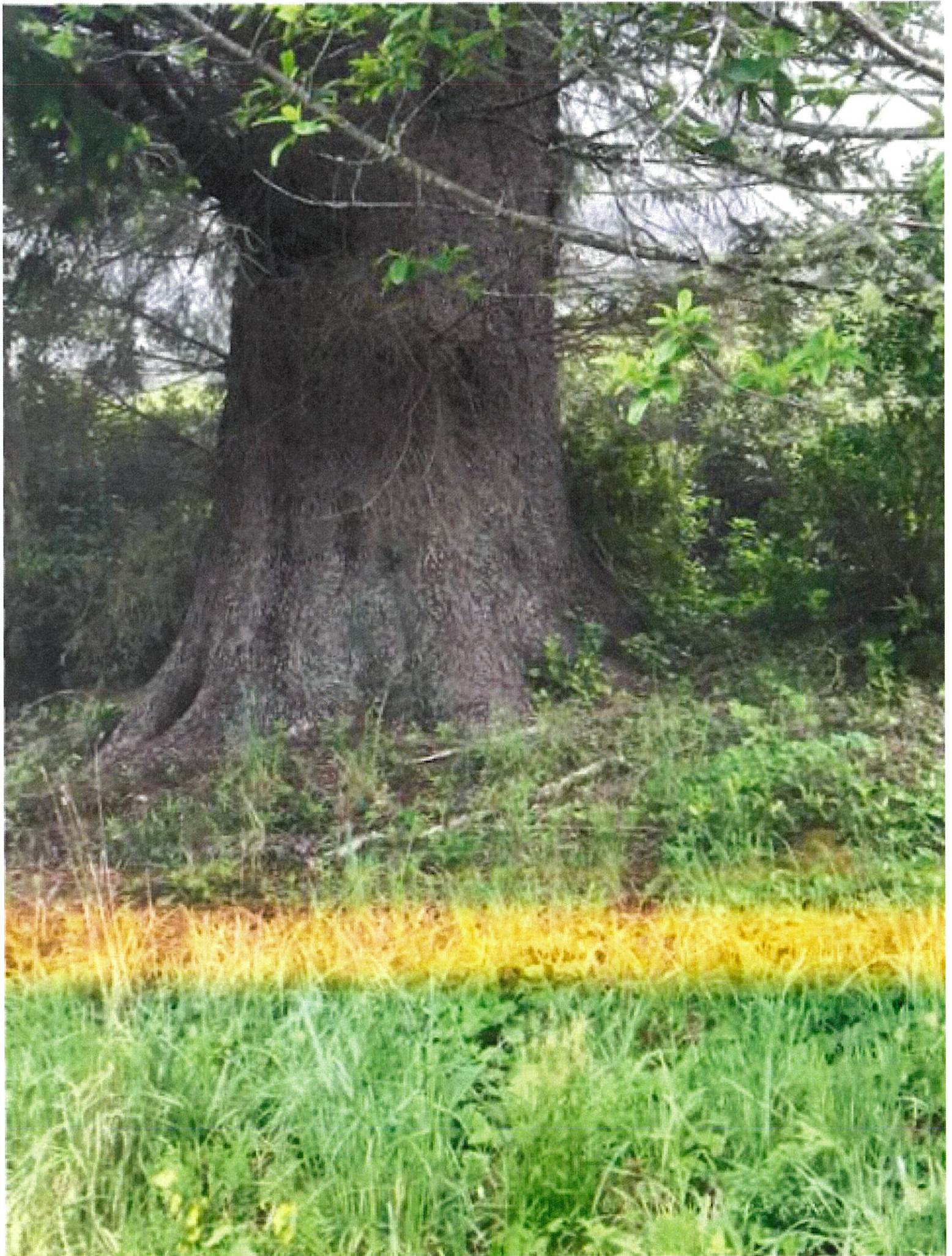
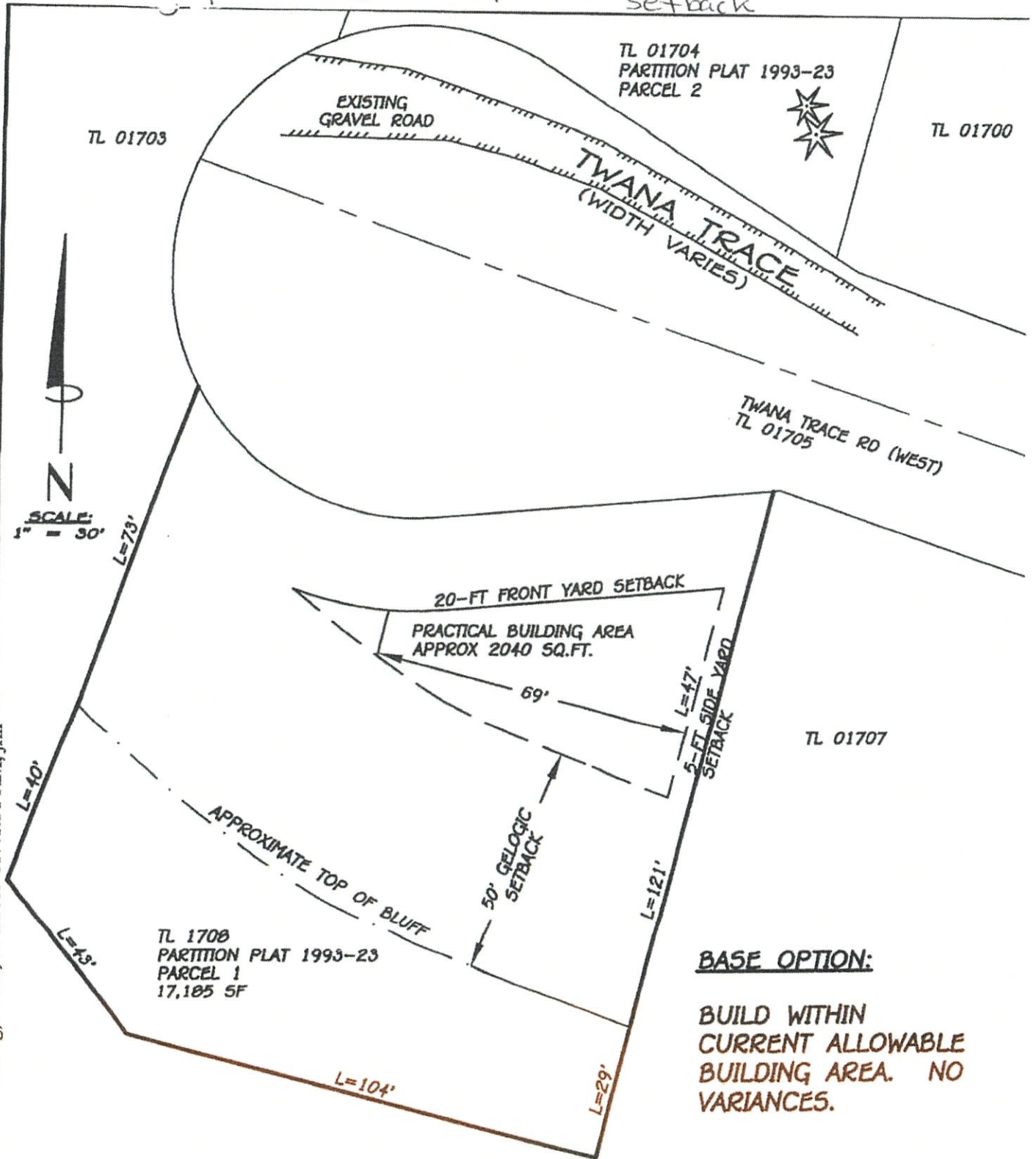


Fig. 16. Depicts building envelope \approx 20 ft (from 2005 Geotech) setback



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SHEET 1 OF 3

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TL 01700
MAP 3N 10W 20BB
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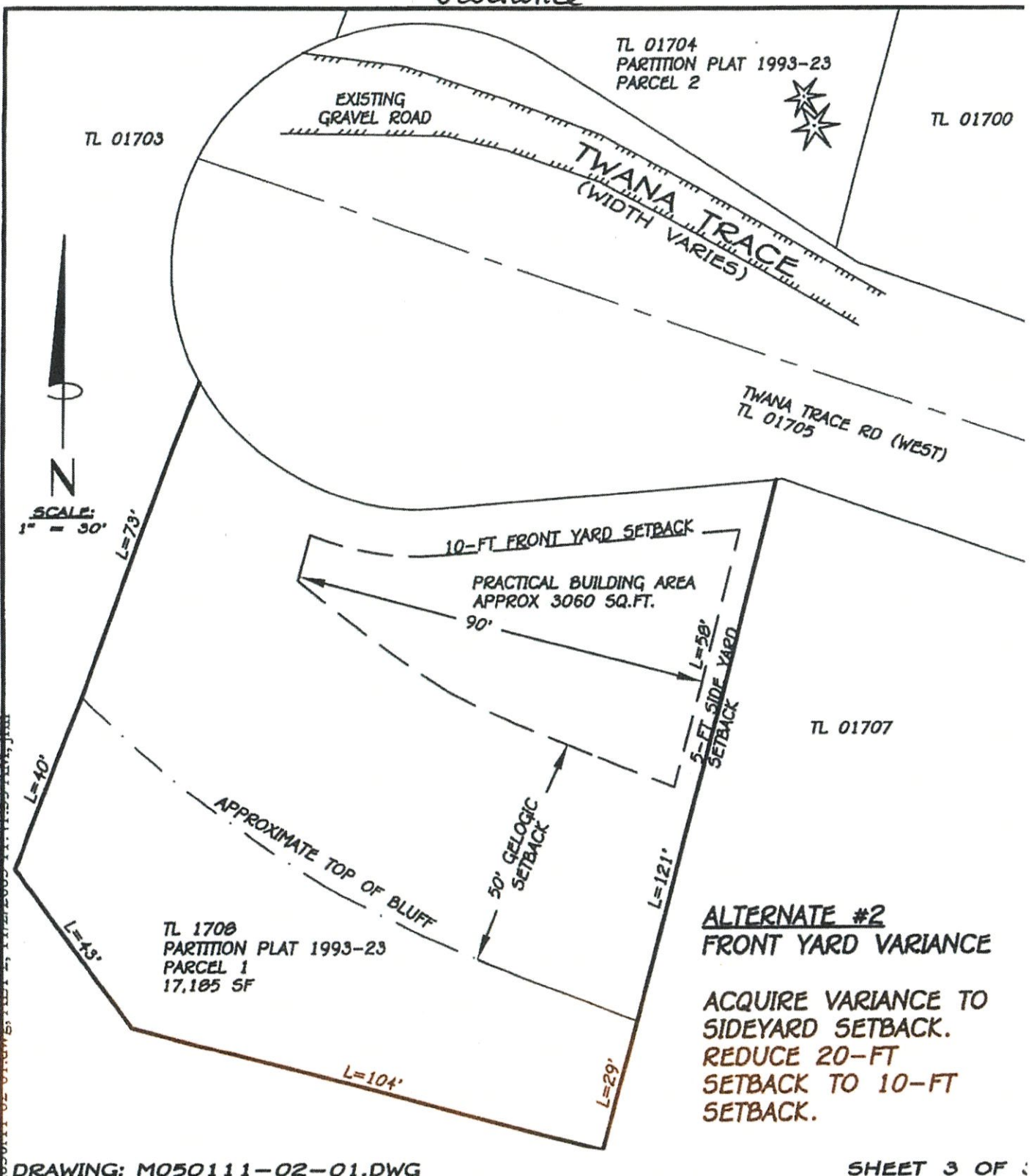
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Fig 17. - Depicting building envelope & LUTT setback variance



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SHEET 3 OF 3

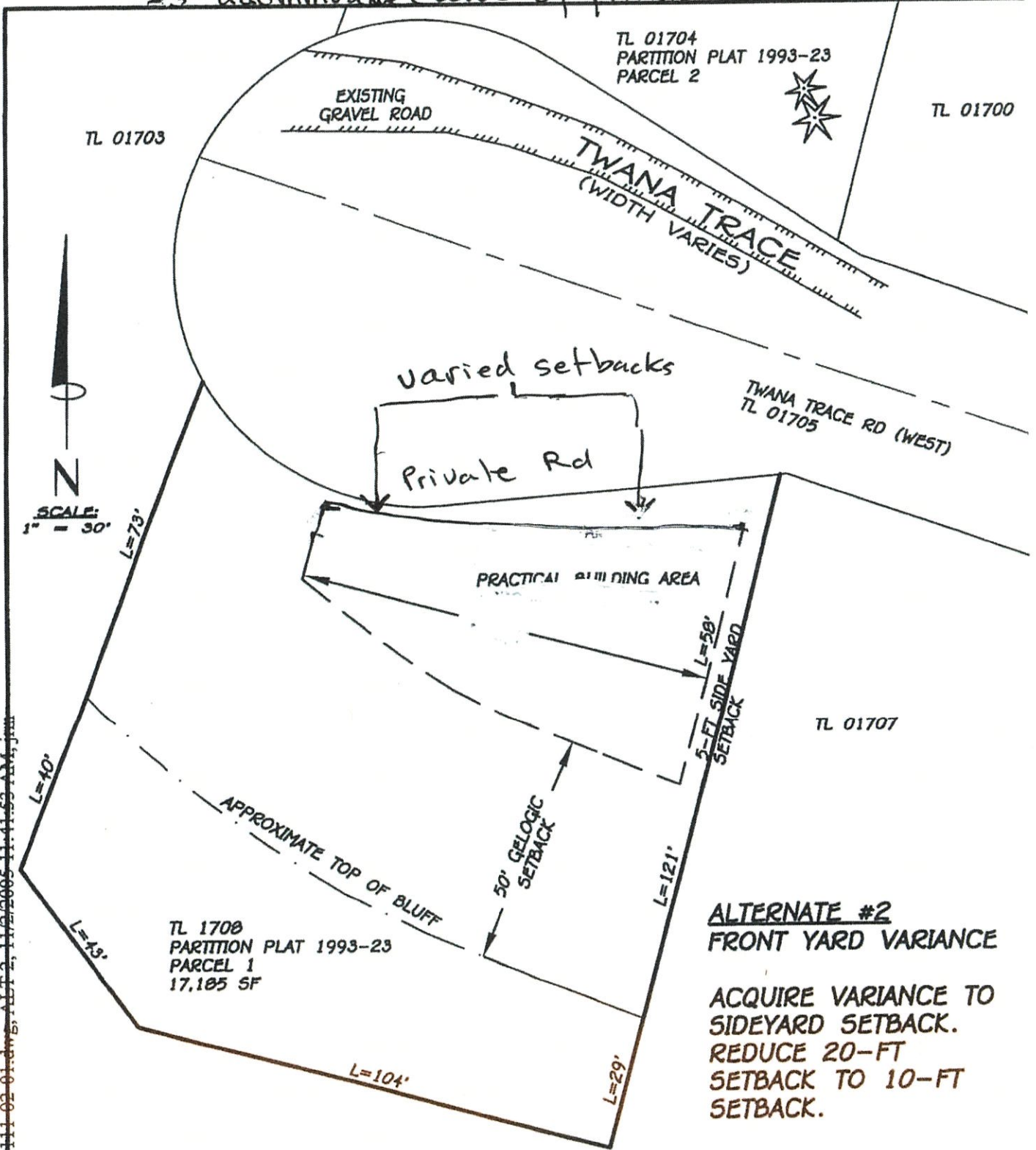
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Fig 18 - Depicts a variable set back between 5' and 10' to accommodate curve of private road



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SHEET 3 OF 3

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Sheila Shoemaker

From: Sheila Shoemaker
Sent: Tuesday, November 7, 2023 3:10 PM
To: 'claudia martin'
Subject: RE: EXTERNAL: Re: Variance request - 3N1020BB01708 - 851-23-000421-PLNG

Thank you for the clarification Claudia.

From: claudia martin <claudiachaconne@hotmail.com>
Sent: Monday, November 6, 2023 8:26 AM
To: Sheila Shoemaker <sshoemak@co.tillamook.or.us>
Subject: EXTERNAL: Re: Variance request - 3N1020BB01708 - 851-23-000421-PLNG

[NOTICE: This message originated outside of Tillamook County -- DO NOT CLICK on links or open attachments unless you are sure the content is safe.]

Hi Sheila,

Yes - the diagram (#17) you attached is correct. I think I may have skipped a number with all my documents- something that Melissa had pointed out.

I do want to note however:

This diagram, which is from the prior owner, only depicts the building envelope that would be possible with a change in the setback from 20 ft to 10ft. It does not depict a footprint of any actual house plan—which would be quite odd.

The requested set back would allow for an appropriately shaped building to be placed. It would also allow for possibly placing a building further away from the drop and from the neighbor's property line to the south; note that no plans have been drawn as I am waiting for the result of the variance request.

Appreciate your time in this—please contact me with any questions.

Hope you are enjoying autumn!

Best,
Claudia

Claudia Martin
503-715-6776

From: Sheila Shoemaker <sshoemak@co.tillamook.or.us>
Sent: Thursday, November 2, 2023 4:53 PM
To: claudia martin <claudiachaconne@hotmail.com>
Subject: Variance request - 3N1020BB01708 - 851-23-000421-PLNG

Sheila Shoemaker

From: Sheila Shoemaker
Sent: Thursday, November 2, 2023 4:54 PM
To: claudia martin
Subject: Variance request - 3N1020BB01708 - 851-23-000421-PLNG
Attachments: FIG 17.PDF

Good afternoon Claudia,

We are in the process of reviewing all documents received for the Variance request and want to make sure we are using the appropriate proposed site plan. Is the site plan labeled Fig 17 the site plan we should be using for the proposal? See attached.

Sincerely,



Sheila Shoemaker | Land Use Planner
TILLAMOOK COUNTY | Community Development
1510-B Third Street
Tillamook, OR 97141
Phone (503) 842-3408 x 3123
Sheila.Shoemaker@tillamookcounty.gov

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The Department is excited to announce that we are OPEN to the public by appointment. To review the list of services provided and to schedule an appointment with us, please visit <https://www.co.tillamook.or.us/gov/ComDev/> to access the appointment scheduler portal.

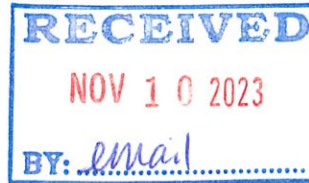


MORGAN CIVIL ENGINEERING, INC.

PO Box 358, Manzanita, OR 97130

ph: 503-801-6016

www.morgancivil.com



November 2, 2023

Claudia Martin
1328 Second Street
Roanoke, VA 24016

claudiachaconne@hotmail.com

Re: *Engineering Portion of Geologic Hazard Report for Tax Lot 1708, Map 3N 10W 20BB, Parcel 1 of Partition Plat 1993-23, Neah-Kah-Nie, Tillamook County, Oregon (Twana Trace West)*
Project #23-08-Mar

Dear Ms. Martin:

At your request, we have completed the site investigation of your property, referenced above. Available maps and previous reports of nearby properties were utilized in this investigation. This investigation also included a site inspection of the subject property with Warren Krager, Certified Engineering Geologist. Mr. Krager investigated the geologic conditions of the site and has addressed them in his report. Morgan Civil Engineering, Inc. (MCE) has then developed the engineering recommendations related to construction on the site. The two reports combined constitute the Geologic Hazards Investigation required by Tillamook County. This engineering portion of the report is prepared for your use in the construction of a single-family home on the property. The standards set forth herein should be incorporated into the development plans for that project.

Previous investigations for this site were prepared in 1989, 1992, and 2005. Other than occasional clearing, there has been no changes noted during this period of observation.

Site elevations noted in this report are based on topographic information obtained from the Oregon Department of Geology and Mineral Industries (DOGAMI) LiDAR project. The elevations are based on the NAVD88 datum, which is approximately sea level.

GHR for Tax Lot 1708, Map 3N 10W 20BB

Neah-Kah-Nie, Tillamook County, Oregon

Twana Trace

Site Conditions

The site and its geologic conditions are generally as described by Mr. Krager in his report. Mr. Krager has investigated the geologic hazards on the site and reported those hazards in his report. Mr. Krager’s 9-page report, dated October 10, 2023, is attached for your use. The property is a roughly rectangular site fronting on a private road to the north. The private road, known as Twana Trace West (TL 01705), is accessed from Highway 101 via Sunset Drive. The property fronts the Twana Trace cul-de-sac to the north for about 167 feet, and is as deep as 150 feet at the eastern property line. At the narrowest point, the property is about 126 feet deep. The adjacent properties in each direction have been developed, but the structures on the properties to the south and southwest are a few hundred feet away. See the attached portion of the assessor’s map for the property’s dimensions and orientation.



The private road is a cul-de-sac known as Twana Trace West, and is improved with gravel to a width of about 10 feet. The useable portion of the gravel road is located on the extreme north side of the private road right-of-way. The balance of the existing gravel turnaround on the south side of the cul-de-sac is only used in cases of emergency. The vast majority of the right-of-way of this cul-de-sac is unimproved. Utilities are available in the private roadway.

GHR for Tax Lot 1708, Map 3N 10W 20BB

Neah-Kah-Nie, Tillamook County, Oregon

Twana Trace

Elevations on the property vary from about 340 feet at the southwest corner to 450 feet at the front of the property boundary along Twana Trace West. The property slopes down to the southwest, descending at about 15 to 25 percent from the front property line. As shown by a dotted line through this property on the assessor's map, a steep head scarp is located on the property about 85 feet south of the front property line at the closest location.

The site is generally vegetated with a thick underbrush of blackberries, thistleberry, sword fern, grasses, and other species of plant typical to the area. A few spruce trees are remaining near the crest of the head scarp.

Findings and Hazards Analysis

The primary relevant geologic hazard on this site relates to: 1) potential instability of landslide head scarp; 2) boulders in excavation; 3) foundation support considerations; 4) soft surface soil; 5) drainage control, and; 6) regional seismicity.

Mitigation of these hazards is discussed in the Development Standards addressed herein and in the detailed recommendations set forth in the report prepared by the geologist.

The North Oregon Coast is defined by the 2021 ORSC as lying within a D₂ Seismic Design Category. As such, structures built in this area must, at a minimum, comply with the structural requirements for the D₂ Seismic Design Category. Strong seismic acceleration will likely result in widespread landsliding, and no slope can be considered immune from failure under these conditions.

Mandatory Development Standards

In addition to the required standards of Section 4.130 (2) of the Tillamook County Land Use Ordinance, the following site-specific standards shall also be required:

A. Development Density – This property should be developed for uses consistent with current zoning (outright or conditional uses). All development should take place in conformance with all other requirements of the Tillamook County Land Use Ordinance, or approved variances, as applicable.

The property is located in the Neahkahnie Urban Residential (NKN-15) Zone.

GHR for Tax Lot 1708, Map 3N 10W 20BB

Neah-Kah-Nie, Tillamook County, Oregon

Twana Trace

B. Structure Foundation and Road Location – The setbacks described by the engineering geologist on page 4 of his report must be followed. All footings for the building or overhanging decks must be set at least 50 feet from the top of the scarp descending to the south. Cantilevering the structure over the 50-foot setback is acceptable. Site access should take place from the private road, Twana Trace West.

We recommend that the house be located upslope and as close to the right-of-way of Twana Trace as permissible. The house structure should be placed upon this parcel in accordance with County setback standards. Footing design and the depth of all footings should be in accordance with Development Standard E noted below.

A setback variance should be applied for in order to create a building area further from the crest of the scarp. A front-yard setback variance should be applied for from Tillamook County and approved. Additionally, the private road right-of-way and turnaround should be modified to change the cul-de-sac into a 'fish-tail' turnaround. A detailed plan can be prepared to update the property lines and create a useable turn-around area for private vehicles and for emergency vehicles. To accomplish this reconfiguration, a detailed topographic survey should be completed of the cul-de-sac and building area on this property.

To change the layout of this road right-of-way and this property, you will need to coordinate with the owners of the roadway, as well as with Tillamook County Department of Community Development, Tillamook County Public Works Department, and the Nehalem Bay Fire and Rescue District. All of those agencies will have input into any changes to the road and this property.

GHR for Tax Lot 1708, Map 3N 10W 20BB

Neah-Kah-Nie, Tillamook County, Oregon

Twana Trace

C. Land Grading Practices – All excavations for driveway and house foundation construction should be done during reasonably dry weather (while it is not actually raining). All exposed native soil should be protected from exposure to rainfall. Protect all cleared areas by covering them with crushed rock or straw according to use; cover driveway and foundation areas with crushed rock and cover landscaping areas with straw.

Additionally, the site should be graded to prevent standing water in the excavated area during construction of the foundation and all subsequent activities. Any cut slopes should be retained using temporary or permanent means of stabilization. All excavated material should be removed from the property. No fill material should be placed on this property unless necessary for access.

All cut slopes shall be graded and dressed to a maximum 2:1 slope and revegetated as noted below. If this option is not viable, a retaining wall, designed by a licensed engineer, can be constructed according to the standards set forth herein. The top of retaining walls, including foundation walls, should be set at least 5 feet horizontally from the face of the retained slope.

No grading of the remaining slope, beyond that required for construction should take place. Also, no grading should be performed within the 50-foot setback from the top of the landslide scarp; a temporary construction fence should be installed at the 50-foot setback line during construction to aid in identifying the 50 feet setback area.

Do not stockpile any soil within 50 feet of the top of the landslide headscarp. Do not disturb the ground within 50 feet from the top of the landslide head scarp.

If grading is to be completed as part of the improvements to the roadway, all fills should be constructed as engineered fills.

GHR for Tax Lot 1708, Map 3N 10W 20BB

Neah-Kah-Nie, Tillamook County, Oregon

Twana Trace

D. Vegetation Removal and Revegetation – All areas disturbed by construction should be promptly revegetated in order to reduce the potential for erosion. On the relatively flat areas, removal of blackberries and other invasive species is permitted on the property. The removal of grass and other ground cover be limited to areas that are needed for construction or that will be landscaped.

Do not remove any vegetation on the head scarp to the southwest. Branches may be removed from evergreen trees on the scarp in order to enhance views. We recommend consulting a professional tree removal company or arborist in order to ensure that the tree will survive after the removal of limbs is completed.

The Oregon Fish and Wildlife Department’s recommended revegetation program for sites such as this is as follows:

Seed disturbed areas with the following grass mixture. Application rate is 12 to 14 pounds per acre.

<i>Species</i>	<i>Percentage of Mixture</i>
Annual Ryegrass	26%
Potomac Orchardgrass	25%
New Zealand White Clover	20%
Perennial Ryegrass	15%
Annual Crimson Clover	14%

Use a 16-20-0 fertilizer in order to speed the establishment of the cover material. In order to further contribute to the stability of the disturbed areas, jute matting, straw cover, or another stabilization product such as SoilGuard®, should be placed over the soil in order to help protect against erosion before the seeds are allowed to germinate. In addition, planting shrubs and trees, such as salal, red elderberry, barberry, escallonia, cistus, ceanothus, etc., will further contribute to the long-term stability of the site.

GHR for Tax Lot 1708, Map 3N 10W 20BB

Neah-Kah-Nie, Tillamook County, Oregon

Twana Trace

Prior to planting, I recommend spreading organic topsoil over the disturbed areas in order to improve the likelihood of long-term vegetation growth. Use topsoil from the site that was stockpiled before excavation, or import topsoil from a nearby site.

Vegetation on the site should be monitored and replaced, as necessary. Ground cover is important to stabilizing any disturbed slope and prevents future sloughing.

E. Foundations – The foundation should be a continuous, reinforced concrete perimeter system, using reinforced concrete foundation walls, where required. If a crawl space is planned beneath a wood first floor, I recommend the use of continuous, reinforced concrete strip footings running between perimeter foundation walls, in order to allow for continuity of the reinforced concrete footings. Isolated footings should not be used within the perimeter foundation walls. Interior footings should be integral with the continuous perimeter footings. The first-floor joists should then be supported either with conventional posts and beams, or pressure treated pony walls on continuous strip footings tied together with the continuous perimeter footings.

The bottom of all footings and pads should be excavated to below any organic material and previously placed fill material. Footings should rest at least 2 feet into the rocky soil on the site (approximately 4 feet below the existing ground surface). There is a potential for buried topsoil or isolated pockets of organic material that extend deeper into the bearing material than in other locations. All organic debris and topsoil should be removed from the building footprint, regardless of depth.

The site lends itself toward the use of a daylight basement design for the home in order to economically use the existing slope of the site. Alternatively, the foundation should be stepped in order to roughly follow the existing slope of the property. However, subsurface conditions may result in a relatively shallow foundation being the most practical solution for the property. Digging through soil containing large rocks may prove difficult and costly, though the neighbor immediately to the west reportedly found subsurface rocks that were consistently the size of the rocks exposed on the surface.

Removal of large rocks may result in excavating to below the desired foundation depth. In such a case, the resulting hole should be filled with an engineered fill. Fill the resulting hole with crushed rock and compact it in level lifts not to exceed 8 inches in depth.

GHR for Tax Lot 1708, Map 3N 10W 20BB

Neah-Kah-Nie, Tillamook County, Oregon

Twana Trace

Due to the rocky terrain and rocky soil on the site, do not use soil anchors, piles or auger cast piers. All foundations should be constructed by excavating the soil in order to reach bearing material and depth. Construction of a concrete basement slab set on cut material is acceptable. Do not use concrete slab on grade construction built upon fill. Use structural slabs on supports when possible.

All footings should rest at least 12 inches into the firm yellowish-brown silt and clay soil described by the geologist in his report. Regardless of depth, the bottom of all footings and pads should be excavated to below any organic material and previously placed fill material. There is a potential for buried topsoil or isolated pockets of organic material that extend deeper into the bearing material than in other locations. Regardless of depth, all organic debris and topsoil should be removed from the building footprint.

The construction of a concrete slab on grade is acceptable on a prepared pad. The area to support the slab should consist entirely of cut material and be covered with at least 6 inches of compacted crushed rock.

Below any concrete slab, I recommend the use of a capillary break in order to prevent moisture directly under the slab. Below the slab, use a layer of plastic sheeting, clean 3/4-inch crushed rock (no fines), or a combination of both options.

When excavation takes place, it is recommended that a representative of MCE, or an equivalent geotechnical specialist or engineer, be consulted in order to determine whether the appropriate materials have been exposed for foundations. I believe that such an inspection is extremely important and, therefore, I recommend that inspection of the foundation excavation prior to footing construction be a **mandatory requirement for construction**.

Over-excavate the foundation and place at least 4 inches of 3/4"- crushed rock over the soil, then mechanically compact the crushed rock before the footings are constructed.

Do not use concrete slab-on-grade construction built upon fill. Slabs supported simultaneously on cuts and fills will be subject to differential settling. Use structural slabs on supports or alternative methods of construction.

Soil bearing pressures at the bottom of all footings should not exceed 1500 pounds per square foot on approved soil. All footings should be at least 18 inches in width.

GHR for Tax Lot 1708, Map 3N 10W 20BB
 Neah-Kah-Nie, Tillamook County, Oregon
 Twana Trace

Any retaining walls should be designed according to the following criteria:

Allowable Soil Bearing Pressure, psf (after compaction is completed)	1,500
Lateral Soil Bearing Pressure on Unrestrained retaining walls with level backfill, pcf/ft of depth, equivalent fluid weight (Active pressure excluding surcharge effects)	40
Lateral Soil Bearing Pressure on Restrained retaining walls with level backfill, pcf/ft of depth, equivalent fluid weight (Active pressure excluding surcharge effects)	50
Lateral Soil Bearing Pressure (Passive), pcf/ft of depth	300
Friction Angle, degrees	30°
Maximum unit weight, pcf	120
Coefficient of Friction	0.35

Backfill behind all retaining walls should be clean, well-drained, imported, select granular backfill. Using native material for backfill behind retaining walls will not be acceptable. All retaining walls require foundation drains, as described in Section H below.

The retaining wall designer should determine whether a retaining wall is restrained or not.

F. Driveway Location and Design – The driveway should be constructed such that the roadbed is entirely on cut soil or engineered fill material. Access should be from Twana Trace. Any location along the front the property is acceptable. Driveway design standards should include the use of a geo-textile support fabric, a minimum of an 8-inch-thick layer of pit-run base rock, and a 3-inch-thick layer of 3/4"-minus crushed rock surfacing. Asphalt surfacing on the driveway is optional.

Improvements to the Twana Trace West private road should be coordinated with the Tillamook County Road Department. All grading should be completed during dry weather. Erosion control measures should be determined during the design of the turnaround.

Grading of the driveway should be included in the detailed site plan for the property. Any necessary retaining walls should also be shown.

GHR for Tax Lot 1708, Map 3N 10W 20BB

Neah-Kah-Nie, Tillamook County, Oregon

Twana Trace

G. Stormwater Management, Runoff and Drainage – All roof drainage should be collected with eave gutters and downspouts and piped to discharge on the surface in the area adjacent to the house. Based on the proposed building area laid out in the previous reports, the open area to the West of the building would be the preferred location for disposal.

An alternative location may be developed if the building area is modified by changes to the front property line. In any case, the water should not be discharged upslope of the structure or within 50 feet of the headscarp to the southwest. Accumulated surface drainage also should be collected and discharged adjacent to the structure. The complete roof drainage system, including roof gutters and downspouts should be installed immediately after the roof sheathing to protect the ground from erosion during construction.

The stormwater should be diffused into the slope adjacent to the building, at least 10 feet from the foundations of any building or deck. Use a perforated pipe, set on the surface of the ground and sloped at less than 2 percent away from the building outfalls. Cap the outfall end of the perforated pipe. The pipe may be placed on the surface or buried in topsoil on a cut shelf that is backfilled around the pipe. The diffusion system should be sized appropriately in order to avoid back ups resulting in heavy localized discharges. Multiple lines of diffusion pipe may be laid on the slope, provided that at least 10 feet of clearance is maintained between pipes.

Use 10 feet of diffusion pipe for each 1000 square foot of surface water collected: roof and driveway.

The vegetated area downslope should be protected from erosion and siltation due to runoff from the construction site by the use of silt fencing or "bio-bags" during construction. Specifically, silt fencing should be placed along the downslope sides of the disturbed surface area and "bio-bags" (or hay bales) should be placed at the locations of visible discharge. A rock construction entrance pad should be constructed in order to avoid tracking soil onto the roadways. These temporary measures should be left in place and properly maintained until all surface revegetation is established. Driveway surface drainage should be collected and transmitted to the diffusion system.

During construction, the excavated area should be graded and maintained to avoid standing water. The site should be graded in order to prevent standing water in the excavated area during construction of the foundation and all subsequent activities.

GHR for Tax Lot 1708, Map 3N 10W 20BB

Neah-Kah-Nie, Tillamook County, Oregon

Twana Trace

H. Foundation Drains – Foundation drains should be installed on the uphill side of all continuous concrete retaining walls and foundation footings. The use of a fabric covered, perforated drainage pipe, such as ADS DrainGuard®, or an equivalent alternative, is recommended. The backfill around and above the foundation drains should be clean, washed drain rock or angular ballast rock in order to ensure good drainage. The drain rock backfill should extend from the foundation drains (at the bottom of the footings) to about 12 inches below the finish ground surface. All foundation drains should discharge toward the lowest point along the wall.

The foundation drains should be piped to discharge downslope from the house and any deck structures. We recommend discharging the foundation drains to daylight as soon as possible downslope of the structure.

I. Topographic Survey – Based on the variable grades on the property and the importance of the crest of the scarp, a topographic survey should be prepared. Having a topographic survey of the property will allow for a house design and site plan specifically for this property. A topographic survey should extend from the existing roadway to the top of the scarp. Additional information will be needed if the turnaround is being realigned. As part of a topographic survey map, all easements and utilities that cross the property should be shown.

I. Site Plan – The topographic survey be used in order to develop a site-specific development plan. The development of a detailed site plan should include all grading, driveway slopes, house location, and any retaining walls. Development of a detailed site plan prior to construction will reduce costs, unexpected costs, and delays. A house foundation designed specifically for this property will likely reduce the amount of excavation.

Summary Findings and Conclusions

1. The proposed use is currently single-family residential. There are no development plans currently available for review. There are no immediate adverse effects on adjacent properties from future house construction. Future development may result in increased stormwater runoff or decreased runoff quality on adjacent properties. Future development proposals should be further evaluated in the context of the recommendations of this report at the time of issuance of a building permit.
2. Hazards to life, public and private property, and the natural environment, which may be caused by the proposed use, are discussed herein and addressed in each of the Development Standards.
3. The methods for protecting the surrounding area from the adverse effects of the proposed development are set forth in each of the Development Standards.
4. The maintenance of new and existing vegetation, and temporary and permanent stabilization programs, are discussed in Development Standard "D".
5. The proposed development of this property, according to the mandatory standards set out herein, will result in the new parcels and future developments being adequately protected from the above described reasonably foreseeable ordinary hazards, although not necessarily from major earthquake, the possibility of which is discussed herein.
6. The proposed development of this property, according to the recommended standards, is designed in order to minimize adverse environmental effects.
7. Periodic monitoring is necessary to ensure that the recommended development standards are implemented for the long-term success of the development.

CLAUDIA MARTIN

November 2, 2023

MORGAN CIVIL ENGINEERING, INC.

GHR for Tax Lot 1708, Map 3N 10W 20BB

Neah-Kah-Nie, Tillamook County, Oregon

Twana Trace

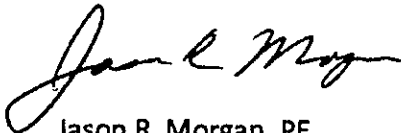
Limitation

The engineering portion of this report is based on a site inspection of the subject property and vicinity, as well as a review of the site topography. The engineering conclusions and recommendations in this engineering portion of the report are based upon the conclusions presented in the geologic report prepared by Warren Krager, CEG. The engineering conclusions and recommendations presented herein are believed to represent the site and are offered as professional opinions derived according to current standards of professional practice for a report of this nature. No warranty is expressed or implied. This report has been prepared for the timely use of the above addressee and parties to the pending development of the subject property, and it does not extend to the activities of unidentified future owners or occupants of the property for which the writer bears no responsibility.

Should you have any questions regarding my investigation or this report, please contact me.

Sincerely,

MORGAN CIVIL ENGINEERING, INC.



Jason R. Morgan, PE
Professional Engineer



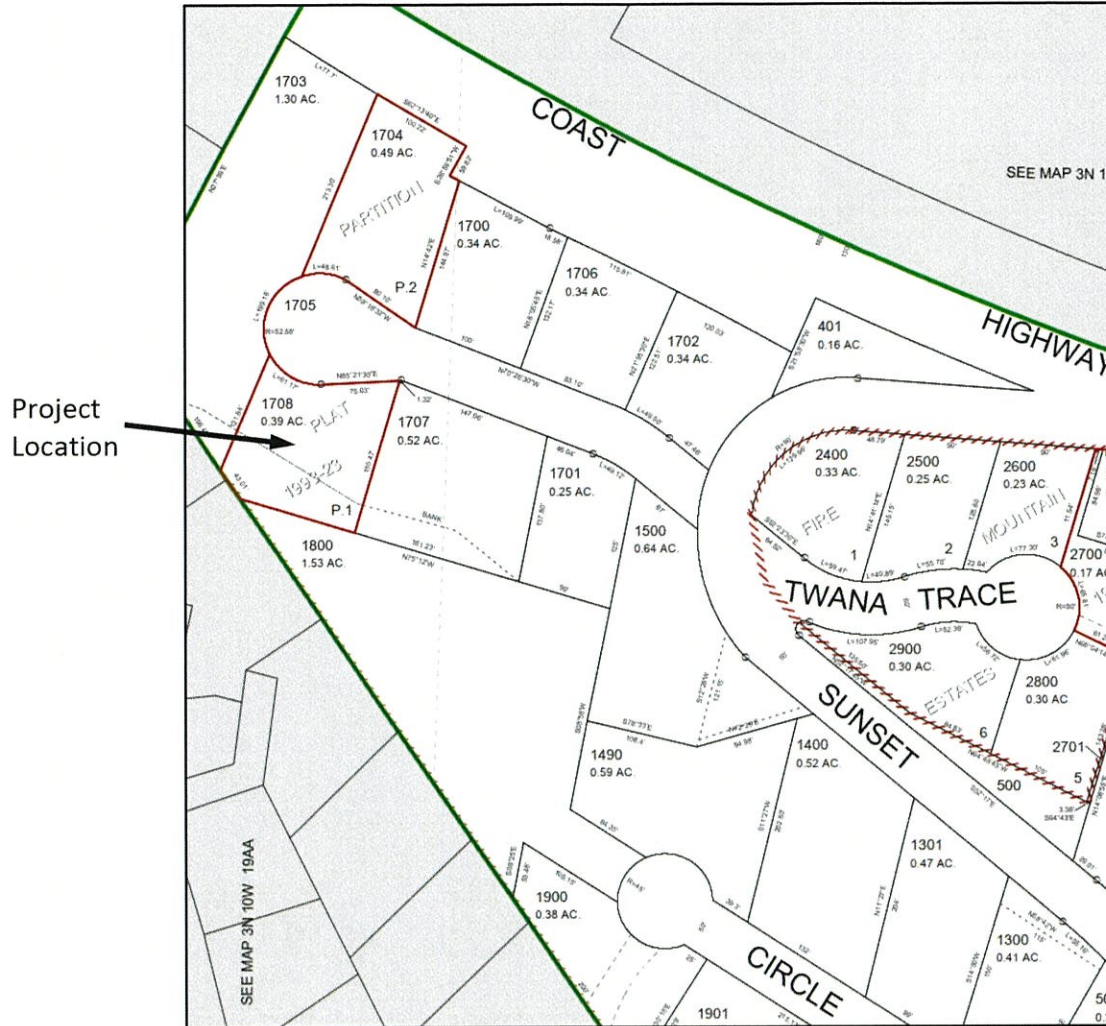
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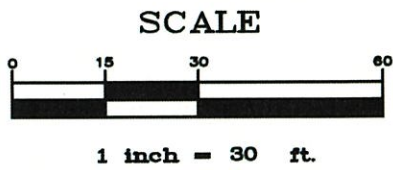
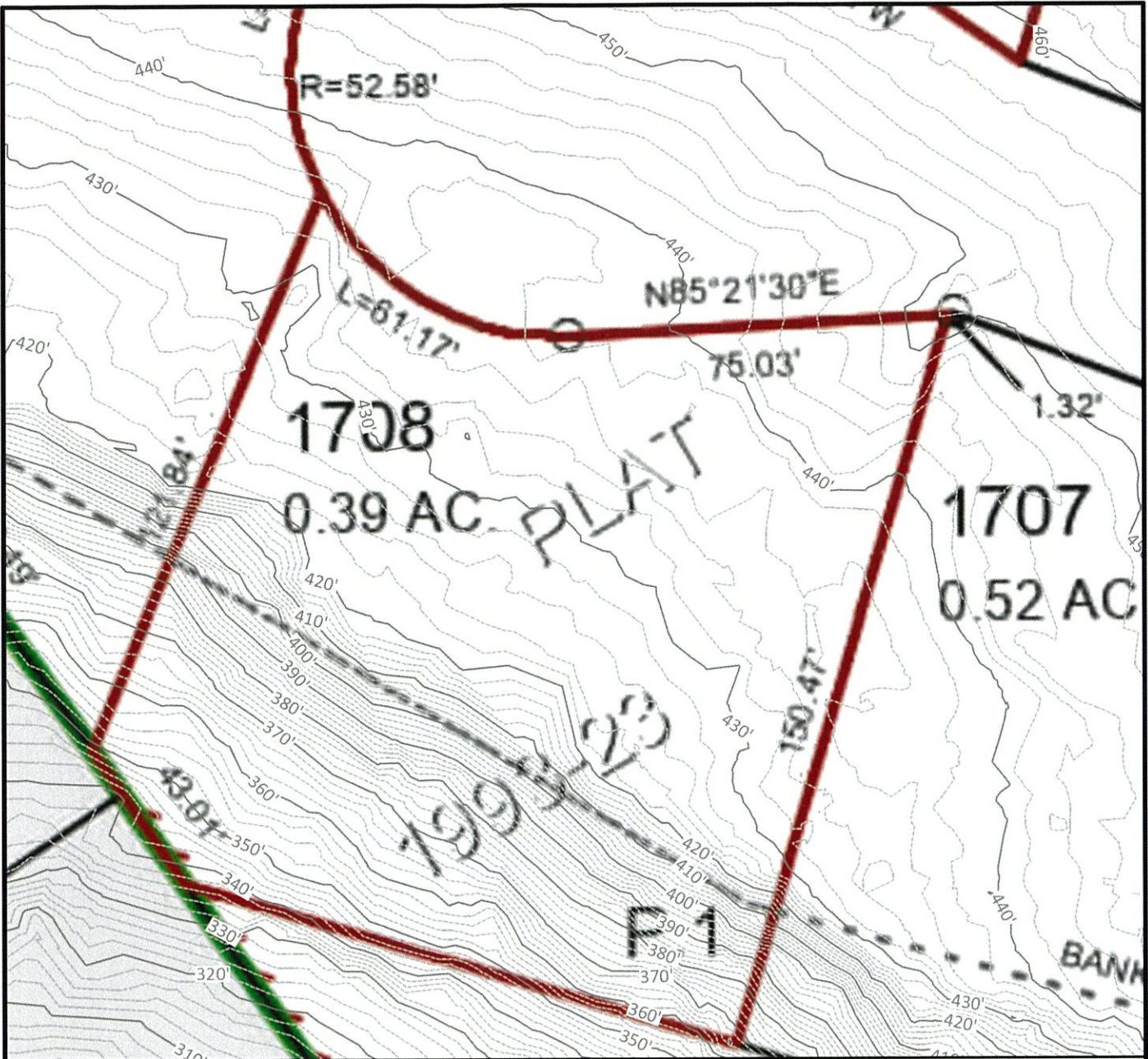
GHR for Tax Lot 1708, Map 3N 10W 20BB

Neah-Kah-Nie, Tillamook County, Oregon

Twana Trace



**Tax Lot 1708, Map 3N 10W 20BB
Parcel 1 of Partition Plat 1993-23
Neah-Kah-Nie, Tillamook County, Oregon
(Twana Trace West)**



SCALE: 1"=30'

OCT. 2023

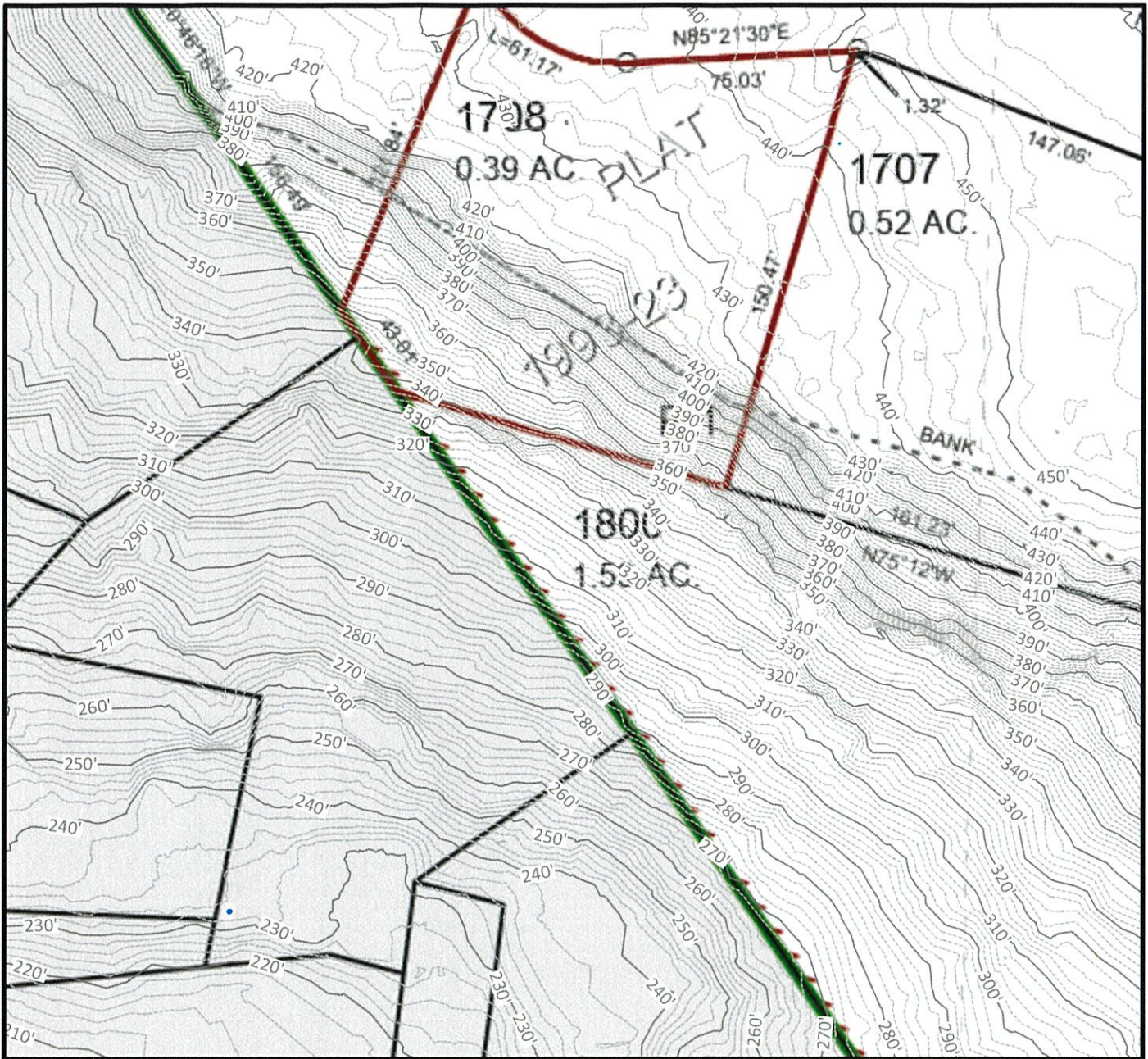
CLAUDIA MARTIN
 TAX LOT 1708
 TWANA TRACE WEST
 LIDAR TOPOGRAPHY
 NEAH-KAH-NIE/MAP 3N 10W 20BB



**MORGAN CIVIL
 ENGINEERING, INC.**

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SCALE



1 inch = 50 ft.



SCALE: 1"=50'

OCT. 2023

CLAUDIA MARTIN

TAX LOT 1708
 TWANA TRACE WEST
 LIDAR TOPOGRAPHY

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